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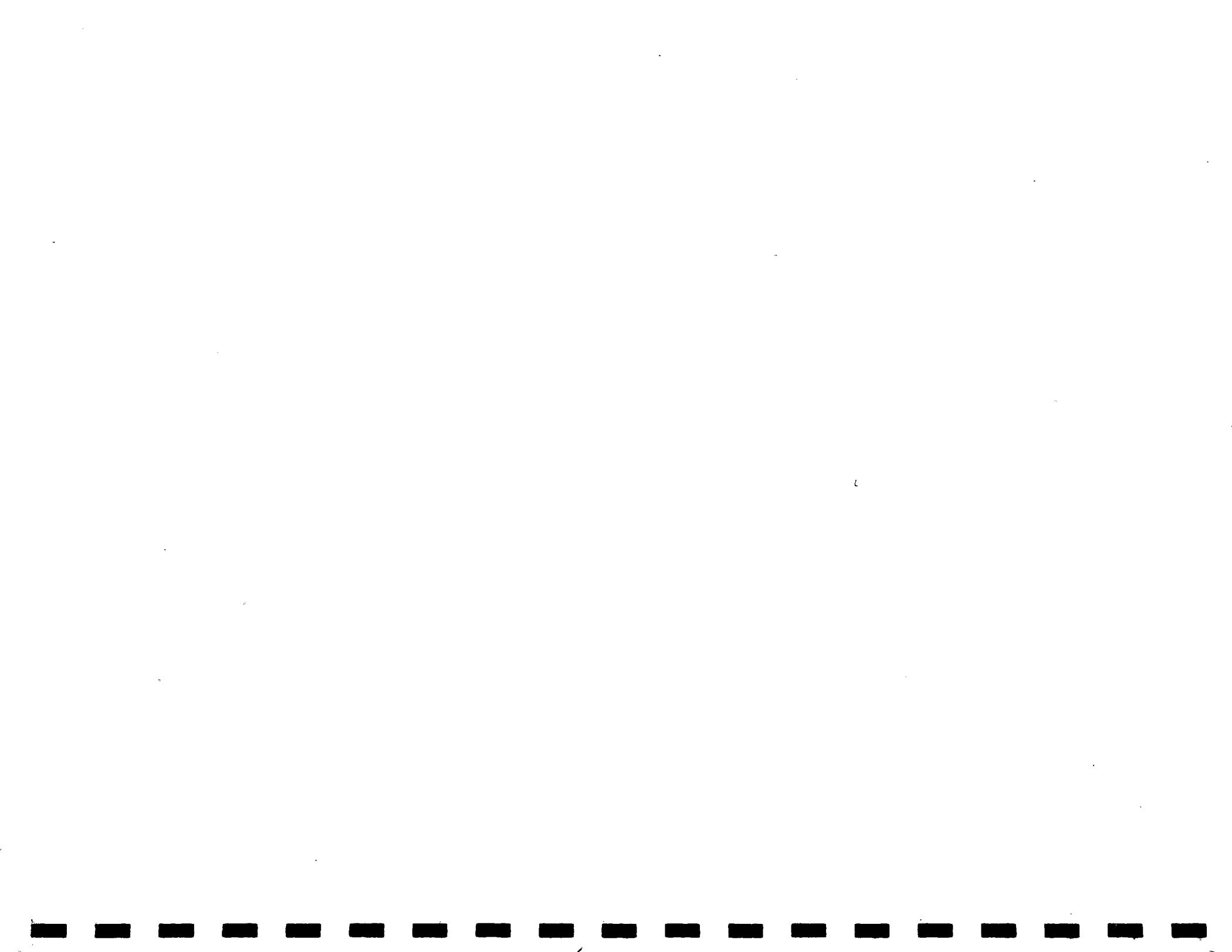
Monticello Vicinity Properties Project

Development of the Derived Contamination Level Standard

Property MS-00685-CS

July 1998

Work Performed Under DOE Contract No. DE-AC13-96GJ87335



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Contamination Level Standard**

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July 1998

**Prepared for
U.S. Department of Energy
Albuquerque Operations Office
Grand Junction Office**

**Prepared by
MACTEC Environmental Restoration Services, LLC
Grand Junction, Colorado**

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Acronyms

BRL	Baseline Rural Landfill
cm	centimeter(s)
cm ²	cubic centimeter(s)
cpm	counts per minute
DCF	dose conversion factor
DCL	derived contaminant level
DOE	U.S. Department of Energy
dpm	disintegration(s) per minute
EDE	effective dose equivalent
EPA	U.S. Environmental Protection Agency
g/cm ³	gram(s) per cubic centimeter
GJO	Grand Junction Office
hr	hour(s)
K _d	soil/water distribution coefficient
m	meter(s)
m ²	square meter(s)
m ³	cubic meter(s)
mg	milligram(s)
mrem	millirem
MSW	municipal solid waste
NA	not applicable
pCi/L	picocurie(s) per liter
pCi/m ²	picocurie(s) per square meter(s)
SAP	Sampling and Analysis Plan
sec	second(s)
SOFI	sprayed-on foam insulation
yr	year

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Executive Summary

This document evaluates the derived contaminant level (DCL) of radiological contamination calculated for future-use scenarios for the former Mexican Hat millsite processing building on property MS-00685-CS. This property is part of the U.S. Department of Energy Grand Junction Office (DOE-GJO) Monticello Vicinity Properties remediation project. The DCL was calculated as the mean value below which future beneficial use, occupancy of the building, or disposal of building materials and debris would result in public radiation dose levels below 15 millirem (mrem) in each steady-state year and below 30 mrem in the year in which the building is demolished. In the case where the structural steel is recycled, contamination levels at the DCL would result in public radiation exposures less than 10 mrem in 1 year. The calculated DCL for this building is 100,000 total disintegrations per minute (dpm) per 100 square centimeters (cm^2) from residual uranium surface contamination. Assumptions necessary for predicting the public dose associated with future use of the building are presented. RESRAD-BUILD (DOE 1996a) computer codes were used to model the expected future exposures.

The analysis reveals that a 100,000 total dpm/100 cm^2 DCL does not exceed the dose limits described above for 1) workers routinely occupying the building; 2) workers potentially involved in demolition of the building at some later time; 3) nearby residents exposed following disposal of building materials in a substandard municipal solid waste landfill; and 4) workers or the general public exposed through recycle and/or reuse of the building materials. Further, the selection of 100,000 dpm/100 cm^2 is sufficiently protective of human health that projected future exposures will result in only a few millirem in a single year. While a higher value for the DCL could have been selected and shown to result in potential doses within the permissible benchmark doses, the selected value incorporates the DOE's philosophy of reducing doses to levels that are as low as reasonably achievable.

Objectives

The primary objective of this evaluation is to derive a residual surface contamination level below which public doses to the associated radiation will be protective of human health, within the limits of applicable regulations and the constraint value negotiated among the State of Utah, the U.S. Environmental Protection Agency (EPA) Region VIII, and DOE. The negotiated annual public radiation dose level below which the building may be released for unrestricted use is 15 mrem (excluding radon) in a typical year, and less than 30 mrem (excluding radon) in the year when demolition occurs, and less than 10 mrem in 1 year from exposure to radioactivity in recycled materials. The radon concentration in the building should not exceed the level recommended to the public by the EPA and Centers for Disease Control in *A Citizen's Guide to Radon* (EPA 1992), which is 4 picocuries per liter (pCi/L) (equivalent to 0.02 working level at 50 percent equilibrium).

Projected Future-Use Scenarios

Future use of the Mexican Hat building is expected to be the same as its current use: an industrial facility used to fabricate machines and repair machine parts and equipment. The building is expected to be demolished in the next 20 years. Exposure to radioactive material on surfaces that are currently inaccessible may occur during demolition, creating a potential for short-term exposures to larger doses compared with normal occupancy. Beneficial future use of the building debris in its present state is unlikely. However, it is possible that the structural steel members may be processed as scrap metal. Because of the age and condition of the building, it is assumed that sheet and skin materials will have no future beneficial use and will go to a landfill.

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1.0 Introduction

1.1 Historical Background

The structure on Monticello Vicinity Property MS-00685-CS at 1149 North Main Street is known as the "Mexican Hat Building." The structure originates from the former Mexican Hat uranium millsite near Mexican Hat, Utah. Information about the history of the structure is sparse. However, the current owner of the building has provided the U.S. Department of Energy (DOE) with his recollection of the events surrounding his acquisition of the buildings.

In an interview with the owner, it was revealed that the subject structure was obtained from the Mexican Hat site as goods in trade for services. The buildings were part of the facility used at the Mexican Hat Millsite to process uranium ore and extract uranium. The current owner hired a construction firm out of Salt Lake City, Utah, to disassemble two buildings at Mexican Hat, move them to Monticello, Utah, and erect them at their current location. The two buildings were joined to form a two-room, open-bay building. After the buildings were erected on the current site, they were washed down and many interior surfaces were coated with sprayed-on foam insulation (SOFI).

While doing characterization and assessment surveys and inspections on the property in 1993, a DOE-contracted radiological control technician noted that, "Most of the back part of the shop was part of the Mexican uranium mill" (Chem-Nuclear Geotech 1993). The technician also performed radiological surface contamination surveys but did not document them as formal surveys and, consequently, did not provide the information necessary to quantitatively interpret the results. Nonetheless, from the information he did report, it is clear that residual radioactive contamination is present on the building surface. The recorded survey results simply state, "The second layer of siding from the ground has contamination from 200 cpm for most of the siding to 200,000 cpm* on one spot on the west side of the building, 8 feet above ground by south window . . ." (Chem-Nuclear Geotech 1993).

1.2 Current Use of the Building

The two rooms share a common wall along their length and cover approximately 1,200 square meters (m^2). Since the building was reassembled on its present site, it has been in continuous use as a machining, fabrication, and repair facility for heavy equipment. The building was constructed in the 1940-1950 era, and does not conform to today's standards of tight closure and high-energy efficiency. There are no designed heating, ventilation, and air conditioning systems to circulate and exchange air in this structure. Large overhead roll-up doors provide the most significant means of ventilation for this structure. Air is passively exchanged between the two rooms of the structure through large interior wall openings.

1.3 Objective of Derived Contaminant Level Standard

It is evident from the information available that the historical use of this structure to house a uranium milling processing plant resulted in residual radioactive surface contamination. To demonstrate compliance with the primary public radiological dose limit (100 millirem [mrem] in one year), the demolition excursion limit (30 mrem/year), and the negotiated target public dose limits (15 mrem/year and 10 mrem/year from recycled scrap metal), it was necessary to determine the residual radioactive

* dpm = cpm/efficiency

surface contamination that could be left in place in this building without exceeding these limits. In essence, the derived contaminant level (DCL) standard is the value below which the resulting radiological dose to a member of the public from future unrestricted use of the structure would not exceed approved and allowable levels. The DCL is the value upon which the subsequent sampling plan for the Mexican Hat building will be based. Developing the DCL, obtaining concurrence on its appropriateness, then developing the data acquisition plan is in accordance with EPA's programmatic data quality objectives guidance (EPA 1993). In addition to conformance with the EPA guidance, it was necessary to derive this allowable residual contaminant value before sampling the building for the following reasons.

- The structure is privately owned and occupied by an operating business, making access difficult.
- The structure is very large with high, open-to-the-peak ceilings.
- Many surfaces of concern are covered with SOFI, making simple routine field measurement impossible.
- It is desirable to remediate only those sections or areas of the structure that pose an unacceptable risk to human health. Thus, defining the concentration associated with acceptable human health risks (i.e., DCL), and developing a sampling program focused on evaluating its occurrence and distribution will result in the most cost- and health-effective use of the DOE's resources.
- It is important to design a sampling plan to collect enough sample data so that results provide risk managers with sufficient statistical information to be able to make sound decisions about the fate of the structure without having to collect additional samples.
- Preliminary estimates predict that the cost to remediate the structure to the typical surface contamination level guidelines (not risk based) used at operating facilities is greater than the cost of demolishing the structure.

Thus, the objective of deriving the DCL before engaging in a complicated sampling process complies with the regulatory guidance and offers the best opportunity to design an appropriate sampling plan for remediation of the Mexican Hat building.

The computer code reports and supporting technical information are included in Appendices A through D.

2.0 Development of Derived Contamination Level Standard

2.1 Future-Use Scenarios

Four future-use scenarios are considered reasonable and likely for this structure.

1. Continued current use of the structure as a fabrication and machine shop;
2. Demolition of the structure at the end of its useful life;
3. Disposition of the building debris into a municipal solid waste landfill; and
4. Reuse or recycle of the structural steel components in the building.

Two of these scenarios, Continued Current Use and Demolition, are expected to "drive" or constrain the calculated DCL. Consequently, the DCL was developed to ensure that residual contamination levels are acceptable for these two scenarios. The DCL was then evaluated to ensure that it is also acceptable for the Landfill Disposal and Recycle/Reuse scenarios.

2.1.1 Continued Current Use of the Building Scenario

The most likely future use of the structure is continued current use as a shop for fabrication, machining, and repair of heavy equipment. It is estimated that the current future useful life of the structure is no more than 20 years. As a structure used as an industrial workplace, the exposure and occupancy factors used to characterize the receptors are typical for a workplace. Several conservative assumptions were made to bound the potential future exposures to workers in this building. Perhaps most significant among these is the assumption that all of the building surfaces are uniformly contaminated at the DCL. A recent examination of the building indicates that uniform deposition on all surfaces is not the case. Rather, it appears that deposition is greatest on some of the flat horizontal surfaces and comparatively sparse on the vertical walls. This is significant because the horizontal surfaces comprise a much smaller surface area than vertical surfaces. Therefore, the assumption of uniform contamination at the DCL is conservative and ensuing computations based on this assumption will tend to overstate the resulting dose estimates.

Table 2-1 presents the computer modeling code input parameters that define the exposure scenario for continued current use of this structure. The use of the value of one tenth of one percent as the input parameter for the Removable (erodible) Fraction is based on information known about the contamination deposited on the building surfaces. The building was contaminated over 20 years ago and has since been subjected to disassembly, transportation to the current site, and reassembly. Through these events, the contaminants that were readily removable were likely liberated. Contamination remaining today is probably tightly adherent. An additional factor that reduces the removable fraction of the remaining contaminants is the SOFI layer, which effectively encapsulates the majority of the contaminated surfaces.

Table 2-1. Continued Current Use of the Building

Input Parameter	Value Used	Model Default	Remarks
Receptor Characteristics			
Number of Receptor Locations	10	NA	Receptors located in corners of the rooms (3 m from the walls) to approximate the worst-case receptor position with respect to the sources. One receptor located in the center of each room to approximate the mean receptor exposure in the room.
Days per Year	240	365	Assume typical work year with 2 weeks vacation, 5 holidays, and 5 personal/sick days per year (48 work weeks).
Fraction of Time Indoors	0.85	0.5	Nature of work requires workers to be indoors for a larger fraction of time than the default assumption.
Fraction of Time in Room	1	1	Maximum case (default).
Inhalation Rate (m ³ /day)	20	18	EPA recommended default value is substituted for ICRP recommended value used as a default in the code.
Ingestion Rate (m ² /hour)	0.0001	0.0001	Default.
Source Characteristics			
Number of Sources	10	NA	Assume all four walls and the ceilings of each room are uniformly contaminated over the entire surface of the walls.
Source Geometry	Area (planar)	NA	Best source geometry match.
Source Concentration (pCi/m ²) U-234 U-235 U-238	2.26 E+6 1.00 E+5 2.15 E+6	NA	Ratio based on 40-year-aged yellow cake. Since inhalation is the dominant dose pathway and the DCFs for yellow cake are most restrictive, the assumption is conservative. Preliminary investigation sampling data supports assumption of yellowcake contaminant mix used.
Removable (erodible) Fraction	0.001	0.5	The building interior surfaces were contaminated with uranium yellowcake during process operations at the Mexican Hat millsite. Since being contaminated (in the 1950s, 60s, and early 70s), easily removable contaminants have likely already been liberated from the building surfaces as the building was disassembled, reassembled and washed down. Contamination remaining on the building surfaces is presumed tightly adherent and has been further fixed by the application of a layer of SOFI.
Air Release Fraction	0.01	1	Contamination medium not readily aerosolized.
Release Period (days)	7,300	365	7,300 days is equal to the 20-year future life expectancy of the building.

Table 2-1 (continued). Continued Current Use of the Building

Input Parameter	Value Used	Model Default	Remarks
Shielding Thickness (cm)	2	NA	Visual inspection suggests that the SOFI varies in thickness from 2-10 cm. Since the thickness is not uniform, a conservative average value of 2 is chosen.
Shielding Material Density (g/cm ³)	0.5	NA	SOFI density estimate.
Receptor / Source Orientation	Rotational	Rotational	Default, best match to RESRAD-BUILD dose conversion factors.
Building Characteristics			
Number of Rooms	2	1	
Air Exchange Rate (1/hour)			Engineering computations indicate that the expected variance in overall air exchange rate is between 0.3 and 25 changes per hour depending upon the indoor-outdoor temperature differential and whether the roll-up doors are open or shut. The time-weighted annual average calculated is 3.5 changes per hour. Values used in the model (default values) are conservative and were used since this parameter could not be effectively measured and to account for a reasonable maximum event year (ASHRAE 1989)
Overall Building	0.8	0.8	
Room 1	2.5	1.0	
Room 2	2.7	1.0	
Room 1 Dimensions (m)		NA	Effective height is the height necessary to compensate the air model for the open-to-the-eaves aspect of the roof. Width and length are measured.
Length	36.6		
Width	18.3		
Effective Height	8.8		
Room 2 Dimensions (m)		NA	
Length	30.5		
Width	18.9		
Effective Height	10.36		
General Factors			
Evaluation Periods (Years)	0, 1, 2, 5, 20	NA	Assumes a 20-year future life for the structure. Higher annual doses received in first year. Five periods evaluated to demonstrate dose trend over time.
Deposition Velocity (m/sec)	0.01	0.01	Default
Resuspension Factor (1/sec)	5.0 E-7	5.0 E-7	Default

Key:

cm = centimeter(s)
 DCF = dose conversion factor
 g/cm³ = gram(s) per cubic centimeter(s)
 m = meter(s)
 m² = square meter(s)
 m³ = cubic meter(s)

NA = not applicable
 pCi/m² = picocurie(s) per square meter(s)
 sec = second(s)
 SOFI = sprayed-on foam insulation

Note: See RESRAD-BUILD computer run (Appendix A).

2.1.2 Building Demolition Scenario

As stated earlier, it is estimated that the current future useful life of the Mexican Hat building is no more than 20 years. It is expected that sometime in the next 20 years the building may be demolished. The exposure factors used to characterize the receptors are typical for a construction demolition scenario. Several conservative assumptions were made to bound the potential future exposures to construction workers engaged in demolition of this building. Again, it was assumed that all of the building surfaces are uniformly contaminated at the DCL. Perhaps most significant among these, however, is the assumption that the workers are confined to the same air volume defined by the building walls as they are currently. In reality, it is likely that the effective "volume" of the "room" in which a construction worker is exposed during demolition is several times larger (perhaps more than one order of magnitude) than that modeled. This will result from the demolition process in which the building skin will be removed early, leaving essentially an "open-air" setting. Table 2-2 presents the computer modeling code input parameters used in the demolition scenario that are different from the values used in the steady-state continued current-use scenario presented in Table 2-1.

It is important to note that this scenario models the exposure potential for the demolition crew doing the demolition work. It does not address the potential exposure to individuals from disposition of the materials. That potential exposure scenario is addressed in the following two sections.

Table 2-2. Building Demolition

Input Parameter	Value Used	Model Default	Remarks
Receptor Characteristics			
Days/Year	30	365	Assume a 1-month demolition period.
Fraction of Time Indoors	0.5	0.5	Default. The nature of the building construction dictates that the building skin will be removed early in the demolition and workers will not likely be confined to tasks strictly indoors.
Source Characteristics			
Source Conc. (pCi/m ²)		NA	Selected the highest concentration calculated in the continued current-use scenario.
U-234	2.26 E+6		
U-235	1.00 E+5		
U-238	2.15 E+6		
Removable (erodible) Fraction	0.01	0.5	Factor of 10 increase over steady-state continued current-use scenario.
Air Release Fraction	0.1	1	Factor of 10 increase over steady-state continued current-use scenario.
Release Period (days)	30	365	30 days is equal to the expected duration of the demolition scenario.
Source Ingestion (g/day)	0.05	0	EPA 1989, Default for workers

Table 2-2 (continued). Building Demolition

Input Parameter	Value Used	Model Default	Remarks
Building Characteristics			
Air Exchange Rate (1/hour)			
Overall Building	3.5	0.8	
Room 1	15.0	1.0	
Room 2	10.0	1.0	
			Engineering computations indicate that the expected variance in overall air exchange rate is between 0.3 and 25 changes per hour depending upon the indoor-outdoor temperature differential and whether the roll-up doors are open or shut. The time-weighted annual average calculated is 3.5 changes per hour. Values selected are conservative since this parameter would likely be much larger than the engineering computations early in the demolition period (ASHRAE 1989)
General Factors			
Evaluation Periods (Years)	0, 0.082	NA	0.082 corresponds to 30 days. Selecting 0 or 30 days has little impact on the results.
Resuspension Factor (1/sec)	5.0 E-5	5.0 E-7	100 times increase over the default value used in the steady-state continued current-use scenario. This factor accounts for the expected increase in airborne dust loading during demolition.

Key: pCi/m² = picocurie(s) per square meter(s)
sec = second(s)

Note: See RESRAD-BUILD computer run (Appendix B).

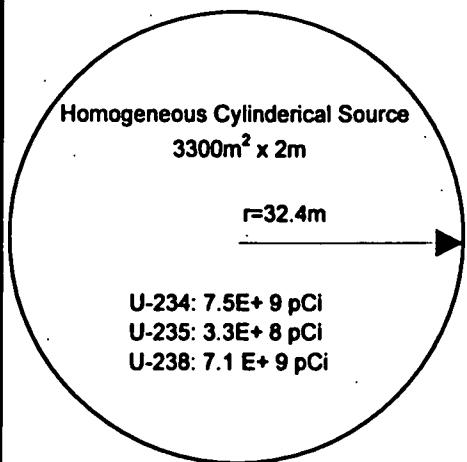
2.1.3 Landfill Disposal of Building Debris Scenario

The most likely future-use scenario for the building debris is disposal in a subsurface sanitary landfill. Given the condition of the building now, it is not likely that the corrugated-steel siding or other nonstructural components will have future beneficial use. It is possible that the structural-steel frame members in the building will be reused or recycled. It is plausible, however, that all of the debris could be disposed in a landfill. Both potential disposal options are evaluated. For this scenario it is assumed that all of the building material debris, both structural and nonstructural, will be deposited in a landfill.

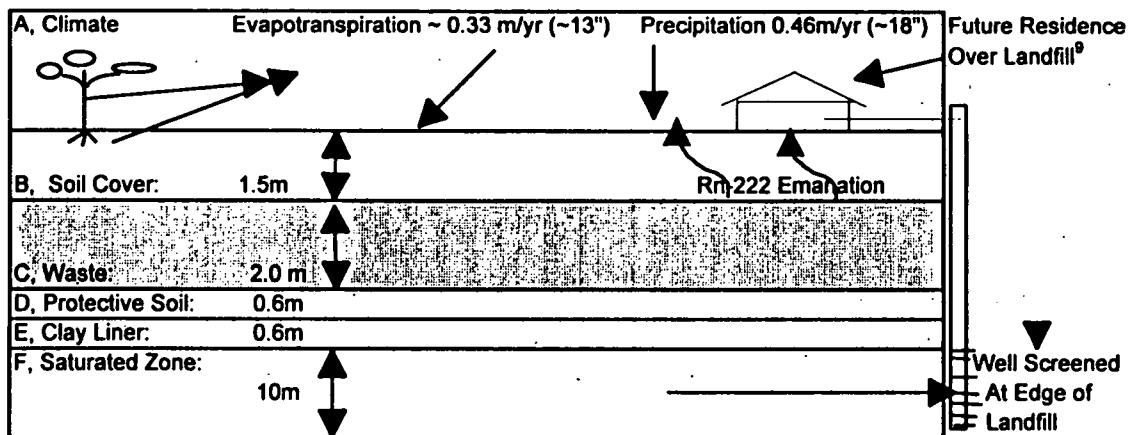
For the evaluation, RESRAD (Version 5.3, DOE 1993) was configured to represent potential long-term conditions in a landfill in the southwest United States, similar to San Juan County, Utah. The landfill design, compared with up-to-date solid waste practice, represents a substandard sanitary landfill; one that could be encountered in an uncontrolled rural setting. The basic configuration (Figure 2-1) is well below RCRA requirements for hazardous-waste disposal (40 CFR 264 Subpart N) and does not meet current design features of contemporary municipal solid waste (MSW) landfill design. Data from the *Integrated Solid Waste Management, Engineering Principles, and Management Issues* (Tchobangoglio et al. 1993), were used to define the minimum features illustrated in Figure 2-1. This configuration satisfies the possible substandard disposal conditions that could be encountered if the building was simply demolished and the materials sent to an older, unpermitted, "rural landfill." The main features observed from Figure 2-1 include:

Figure 2-1. Source and Landfill Configuration — Reasonable Worst Case
 (RESRAD Printouts With All Exposure and Modeling Parameters Are in Appendix C)

Plan View



Cross Sectional View



Major RESRAD Input Parameters

Layer	Discussion, Parameters, Inputs
A, Climate	Based on local conditions. Annual precipitation = 0.46m/yr ¹ , Evapotranspiration ~ 0.33m/yr ²
B, Landfill Cover	Simple soil cover ³ . 1.5m thick (~ 5 ft.), Density 1.5 gr/cc, Erosion Rate: 0.001 m/yr ⁴
C, Waste Layer	Homogeneous mix of entire building inventory ⁵ . 2 m thick, Effective porosity = 0.4, Conductivity = 10 m/yr (3.2E-5 cm/sec) ³
D, Protective Soil Layer	Simple soil base. 0.6m thick (~ 2 ft.), Density 1.5 gr/cc, Effective Porosity = 0.21, Conductivity = 31.5 m/yr (1E-4 cm/sec) ⁶
E, Clay Liner	Simple clay liner. 0.6m thick (~ 2 ft.), Density 1.7 gr/cc, Effective Porosity = 0.06, Conductivity = 3.15 m/yr (1E-5 cm/sec) ⁷
F, Saturated Zone	Alluvial-like materials. Density, 1.5 gr/cc, Effective Porosity = 0.2, Conductivity = 12.4 m/yr (~4E-5 cm/sec), Gradient = 0.02 ⁸

Notes

Other input parameters affecting insitu-chemistry, leaching, groundwater extraction, exposure frequency/duration, etc. were defaults

¹ DOE 1990

⁶ Conservatively assume soil below waste are more permeable than other local fill materials (e.g., local clayey sand)

² Computed See Appendix C

⁷ Minimal clay liner of substandard permeability (1E-5 cm/sec. vs 1E-6 cm/sec. typical)

³ Typical Clayey Sand

⁸ RESRAD default places well screen 10 meters below water table

⁴ RESRAD Default

⁹ RESRAD default places future use residence over the source (Landfill)

⁵ 2 meter landfill lift well mixed

- Typical climatic information is used as the basis for estimating infiltration. The local precipitation of 0.46 m/year (approximately 18 inches) (DOE 1990) is coupled with an conservatively estimated evapotranspiration rate.*
- The entire maximum radionuclide inventory from the Mexican Hat building corresponding to the DCL (100,000 dpm/100 cm²), is treated as a homogeneous source (note: 3,232 m² used in RESRAD-BUILD was rounded to 3,300 m² for this evaluation). This results in a radionuclide inventory of 1.5 E +10 pCi uniformly distributed over a 2-meter landfill lift, which is typical of landfill operation (Tchobangoglou, et al. 1993). RESRAD treats the source as a cylinder, 64.8 meters in diameter and 2 meters thick in this case (Figure 2-1, plan and cross-section views).
- The cross-sectional view illustrates that the waste layer is overlain by a 1.5-meter-thick topsoil cover. This is a simple "end-of-day cover" with no geotextile, geomembrane, or drainage provisions that would normally exist in a contemporary, permitted MSW landfill design/operation.
- The 2-meter waste layer is underlain by a 0.6-meter (approximately 2 feet) soil tier, which is similar to the cover material and commonly referred to as a "protective soil" layer (Tchobangoglou, et al. 1993). Underlying the protective soil layer is a 2-foot-thick sandy clay layer having a saturated hydraulic conductivity of 1E-5 cm/sec.** This bottom clay layer is commonly called the liner (EPA 1994).
- The saturated zone is composed of alluvial-like "sandy clays" in the U.S. Soil Conservation System (EPA 1994) material comparable to those historically observed in Monticello Remedial Action Project Operable Unit III investigations. The hydraulic conductivity (4 E-5 cm/sec) is the geometric mean of measurements reported in Operable Unit III Remedial Investigation/Feasibility Study—Environmental Assessment (DOE 1990). By default in RESRAD, the groundwater extraction well is screened 10 meters below the water table at the down-gradient edge of the landfill.

In this evaluation, all possible pathways available through the RESRAD code were included. The pathways were:

- External radiation from the ground, dust, and radon
- Inhalation of dust and radon
- Ingestion of:
 - Foods (vegetables, meat, milk, aquatics [fish])
 - Water (groundwater, surface water)
 - Soil (incidental)

* A simple landfill water balance performed using EPA's HELP model (EPA 1994) predicts an average 96 percent net evapotranspiration using comparable landfill and regional climatic parameters. The estimated open-reservoir evaporation rate in southeastern Utah is about 48 inches per year, (USGS 1962). It will be illustrated later that infiltration is an important parameter in this evaluation.

** It is informative to compare vertical hydraulic conductivities. The soil cover and waste layer are both 3.2E-5 cm/sec, which is comparable to alluvial materials reported in the Operable Unit III area (DOE 1990). The protective soil layer (1E-4 cm/sec) is considerably more permeable than the overlying layers. This feature enhances the downward hydraulic migration potential. The 1E-5 cm/sec clay layer is substandard and a factor of 10 more permeable than EPA guidelines for RCRA landfills (1E-6 cm/sec). Standard landfill design also includes several other leachate migration controls (e.g., synthetic liners, geotextiles, drainage and collection systems, etc.) that are absent in this analysis.

RESRAD's default residential receptor exposure factors were used in this analysis. These exposure factors (i.e., duration, frequency, contact rate) are conservative and comparable to EPA guidance (e.g., "Risk Assessment Guidance for Superfund" [EPA 1989] and "Supplemental Guidance: Standard Default Exposure Factors" [EPA 1991]).^{*} As indicated above, Appendix C contains detailed input/output sheets and technical support, including exposure factors.

Time Frame, Pathway Contribution, and Cases for Analysis

The evaluation time was set at 1,000 years after disposal of the building debris in a rural landfill. This time frame was selected because it permits 1) evaluation within the traditional 30-year regulatory time horizon of CERCLA; 2) a longer term evaluation of the long-lived radionuclides of interest; and 3) a longer evaluation term to observe the effects of surface soil erosion and the leaching and migration through groundwater.

The initial steps of evaluation, after configuring the source as discussed above, indicated that pathway contributions varied with time. For example, in the earlier exposure years, inhalation of radon gas appeared as a significant pathway contributor; however, the predicted doses are insignificant when compared to background (i.e., all less than 1.0 mrem/year computed versus an annual average background dose in the U.S. of 300 mrem/year [NCRP 1987]). It was also observed that the groundwater pathway was a minor contributor. Initial analyses also suggested that if the waste materials were disposed in a shallow landfill (e.g., 1 foot below ground surface), human consumption of plants and inhalation of dust becomes a significant pathway in the early years.

Based on these initial findings, the following three cases were defined to develop appropriate risk characterization information for evaluating the DCL. RESRAD computer runs for each of the landfill disposal cases are presented in Appendix C.

- **Disposal Case A:** The *Baseline Rural Landfill (BRL)* is described in Figure 2-1. This is a reasonably conservative, though credible evaluation. Case A corresponds to a reasonable maximum exposure scenario suggested by EPA guidance (EPA, 1989). Exposures from the evaluation are "high end"^{**} and doses are likely to be overestimated.
- **Disposal Case B:** For the *Extreme Baseline Rural Landfill—Exaggerated*, Case A is modified with both the radionuclide inventory and the clay layer hydraulic conductivity increased (made more permeable) by a factor of 10. In addition, a significant irrigation water load equaling the annual precipitation (0.46 m/year, approximately 18 inches per year), is added to the hydrologic system. This evaluation over-estimates the plausible source strength, and imposes unlikely conditions that dramatically accentuate leachate production and radionuclide migration through groundwater to a residential receptor. Figure C-1 illustrates this configuration.
- **Disposal Case C:** For the *Baseline Rural Landfill—Shallow*, Case A is modified again to incorporate only a 1-foot cover (versus 6 feet in the BRL case). This case is intended to evaluate the potential for external gamma and radon to be significant contributors if the waste materials are given shallow burial.

^{*}For example: 23 m³/day inhalation, 365 days/year exposure, 100 mg/day incidental soil ingestion, 100 percent of all consumption from contaminated sources (except fish: 50 percent) (DOE 1993).

^{**}EPA guidance suggests that decision makers be presented at least one exposure estimate in the range of the 90th percentile estimate (EPA 1992). Considering the unlikelihood of a substandard rural landfill disposal and the conservative residential exposure scenario, the BRL (Case A) scenario meets guidance.

In all three cases, no modifications were made to the default RESRAD chemistry factors (e.g., distribution coefficients, solubilities, and related parameters that influence leachate production and in-situ chemistry).^{*} This topic is discussed fully in Appendix C.

These three cases are intended to provide risk managers a range of information on which to base risk management decisions. The plausible, though conservative, BRL case (Case A) can be contrasted with the two more conservative and less likely cases (Cases B and C) to bound the evaluation and obtain a sense for the effect of variability in the assumptions. This approach is consistent with guidance from the National Academy of Science on risk assessment and risk management (NAP 1994).

2.1.4 Recycling and/or Reusing Potentially Contaminated Structural Steel Scenarios

As mentioned above, it is credible to consider that the structural-steel frame members in the building will be reused or recycled. In considering the likely future uses of the structural steel, it is reasonable to assume that the steel would be reused to construct a building or buildings similar in construction to the current structure. In fact, future structures designed for human occupancy and incorporating the used steel frame members are likely to be constructed to higher standards for energy efficiency. Such construction would further inhibit migration of residual contaminants to occupied areas where persons could be exposed. It is not reasonable to conclude that the building debris from this structure would be reused to construct a building to be used as a residence or some other high-occupancy facility. Consequently, the scenario involving the continued current use of the building adequately represents the exposure potential for the case in which the structural steel is reused. Three recycle exposure scenarios involving the steel-frame members are considered and discussed below.

Recycle Scenario A: *Reuse (including public reuse)*—Reuse of the building in its existing state parallels the Continued Current-Use Scenario discussed in Section 2.1.1; however, the analysis is generalized to address a common public use, such as a school or similar institutional application (even though these future uses are not considered credible), in addition to occupational exposures. Table 2-3 summarizes Recycle Scenario A.

Recycle Scenario B: *Recycle Worker*—Recycling the building steel structural members would require that steel workers come into contact with the materials. This scenario addresses exposures to workers resulting from cutting and casting the materials, and handling the slag from the melt operation. This scenario shunts the largest fraction of the radionuclide inventory to the slag in order to conservatively estimate the expected dose to recycle workers. This is the most probable of the three recycle scenarios presented. Table 2-4 summarizes Recycle Scenario B.

Recycle Scenario C: *Public Exposure Through Use of Recycled Material*—Recycling the building structural steel members could result in recycled materials being fabricated into commercially available products. This scenario addresses exposures to the general public resulting from the use of home, school, and office furniture and appliances manufactured from recycled contaminated steel. This scenario shunts the largest fraction of the radionuclide inventory to the ingot in order to conservatively estimate the expected dose to users of consumer products manufactured from contaminated recycled steel. This is a less probable radionuclide partitioning than that presented in Scenario B. Table 2-5 summarizes Recycle Scenario C.

*Defaults were selected to minimize the uncertainty stemming from selecting radionuclide-specific variables for the dominant pathway, since little is known about the in-situ chemistry of the Mexican Hat building materials. RESRAD's default Kds are typical values, obtained from relevant documented literature, and are representative of a wide range of conditions. On the other hand, regional-specific climatic and hydrogeologic information was used on the premise that the disposal location would be in the general southwestern portion of the United States.

Table 2-3. Recycle Scenario A: Reuse (including public reuse)

<p>In the "Reuse Scenario Including Public Reuse" scenario, affected materials (steel and siding) are simply kept in their current status. In the case of the Mexican Hat building, this essentially parallels the RESRAD-BUILD DCL long-term assessment. If the building materials were reused in a public building, such as a school, individual doses would, in the worst case, be proportional to the 2,000 hours/year worker exposure frequency. For example, public school entails 1,080 hours/year exposure time per year (6 hours/day × 180 days/year, excluding absences, field trips, recess, etc.). Thus, school children would receive approximately 54% ($1,080 / 2,000$) of the worker dose if classroom conditions were comparable to current conditions (e.g., same dust load). If conditions were improved (e.g., less dusty, better facing than the current SOFI, etc.), public doses would be even lower. Exposure pathways include inhalation, incidental ingestion, and direct gamma.</p>		
Exposure Parameter	Value Used	Remark
Exposure Frequency	2,000 hours/year	EPA 1991, standard work year.
Inhalation Rate	20 m ³ /day	EPA 1991, reasonable upper-bound.
Incidental Ingestion	0.0001 m ² /hr	DOE 1996b, RESRAD-RECYCLE Default
Building Parameters	Volume - 5,380 m ³ Air change - 2.7/hr	<p>East Bay of Mexican Hat building is assumed to be an example of a typical building made from reused material.</p> <ul style="list-style-type: none"> • East Bay Volume • East Bay Ventilation Rate (conservative) <p>Engineering computations for the conceptual school building show that a ventilation air exchange rate of 3.1 to 3.9 air changes per hour is appropriate. Conversations with architectural firms confirm that the design air exchange rate for public school buildings is expected to be between 3 and 4 air changes per hour (ASHRAE 1989).</p>
Emission Rate	0.000001/hr	DOE 1996b, RESRAD-RECYCLE Default
Surface Transfer Fraction	0.01	DOE 1996b, RESRAD-RECYCLE Default
Number Exposed	4	DOE 1996b, RESRAD-RECYCLE Default

Note: By analogy, this scenario is applicable to other potential reuse applications such as a commercial/retail establishment, public building, or office setting.

Table 2-4. Recycle Scenario B: Recycle Worker

In the "Recycle Worker" scenario, affected materials are cut, melted, and recast into recycle products. Three workers having significant exposure potential are assessed: Scrap Cutter, Scrap Processor, Slag Worker and Ingot Caster. These are assumed to be the highest exposed workers. Exposure pathways include inhalation, incidental ingestion, and direct gamma.

Exposure Parameter	Value Used			Remark
	Scrap Processor	Slag Worker	Ingot Caster	
Radionuclide Partitioning	Ingot- 8% Air - 2% Slag - 90%	Ingot- 8% Air - 2% Slag - 90%	Ingot- 8% Air - 2% Slag - 90%	Contamination is deposited on building structural surfaces and friable; not embedded. There are no activation products. Likely fate for the bulk of activity is to the slag. Estimate that 90% of the radionuclides are partitioned to the slag - provides high end estimate of scrap metal recycle workers' exposure.
Scrap Throughput	100 tons	100 tons	100 tons	DOE 1996b, RESRAD-RECYCLE default. Total quantity of recyclable structural steel in the Mexican Hat building is estimated to be approximately 95 tons.
Exposure Frequency	12 hr/yr	25 hr/yr	2.5 hr/yr	DOE 1996b, RESRAD-RECYCLE default. Reflects the time to which the worker is exposed to the building materials.
Inhalation rate	20 m ³ /day	20 m ³ /day	20 m ³ /day	EPA 1991, reasonable upper-bound.
Incidental Ingestion	50 mg/day	50 mg/day	50 mg/day	EPA 1991, typical.
Dust Load	10 mg/m ³	10 mg/m ³	10 mg/m ³	DOE 1996b, RESRAD-RECYCLE default. (very dusty, ACGIH Dust Limit = 10 mg/m ³).
Respirable Fraction	0.1	0.1	0.1	DOE 1996b, RESRAD-RECYCLE default.
Number Exposed	3	1	2	DOE 1996b, RESRAD-RECYCLE default.

Key:
 hr = hour(s)
 m = meter(s)
 m³ = cubic meter(s)
 mg = milligram(s)
 mg/m³ = milligram(s) per cubic meter(s)
 yr = year

Note: Scrap Mass Distribution: Ingot = 90%, Slag = 9%, Baghouse = 0.997, Atmosphere = 0.003%

Table 2-5. Recycle Scenario C: Public Exposure Through Use of Recycled Material

In the "Public Exposure Through Use of Recycled Material" scenario, affected materials are melted and recast into recycle products. The recycle products are Home Furniture (e.g., chairs), Home Appliance (e.g., refrigerators), and Office Furniture (e.g., desks). The Office Furniture use involves 2,000 hours/year. Public school use entails 1,080 hours/year maximum scheduled exposure time (6 hours/day × 180 days/year). The exposure scenarios include direct gamma from radionuclides recast into the solid products. Thus, exposure frequency and duration (i.e., time) are the only exposure variables.

Exposure Parameter	Value Used			Remark
	Home Furniture	Home Appliance	Office Furniture	
Nuclide Partitioning	Ingot- 90% Air - 2% Slag - 8%	Ingot- 90% Air - 2% Slag - 8%	Ingot- 90% Air - 2% Slag - 8%	Contamination is deposited on building structural surfaces and friable; not embedded. There are no activation products. Likely fate for the bulk of activity is to the slag. Conservatively estimate that 90% of the radionuclides are partitioned to the ingot - provides high end estimate of end product user's exposure.
Scrap Throughput	100 tons	100 tons	100 tons	DOE 1996b, RESRAD-RECYCLE default. Total quantity of recyclable structural steel in the Mexican Hat building is estimated to be approximately 95 tons.
Product Life (exposure duration)	10 years	10 years	10 years	DOE 1996b, RESRAD-RECYCLE default.
Exposure Frequency	3,650 ^a hours/year	730 ^b hours/year	2,000 ^c hours/year	DOE 1996b, RESRAD-RECYCLE default.

^a10 hours/day.^b2 hours/day.^cStandard Work Year.

Note: Scrap Mass Distribution: Ingot = 90%, Slag = 9%, Baghouse = 0.997, Atmosphere = 0.003%

2.2 Microcomputer Exposure Modeling Codes

The models selected to evaluate the exposure and dose potential to individuals from contamination left in place on the Mexican Hat building surfaces were selected on the basis of their representation of the conditions being evaluated, and their acceptance within the regulatory and health physics communities as effective and suitable models. Using computer models of any description to predict potential future exposure conditions associated with an actual site is to ascribe or imply some measure of "accuracy" to the results they provide. In reality, there is no way to effectively measure the accuracy of any model. It is principally because accurate direct measurement cannot be made that a model is used to make a prediction. Selecting the model that most closely approximates the scenario to be evaluated and using realistic and plausible input parameters determines the confidence one has about the modeled results. For these reasons, the RESRAD family of modeling codes was selected to model the scenarios relative to the Mexican Hat building. The clear advantage to using codes from the same family is in the commonality among them. The basic dose calculation methods used in RESRAD (e.g., dose conversion factors) are used consistently in the RESRAD-BUILD and RESRAD-RECYCLE codes.

The RESRAD code has been in use in various versions for several years and has been extensively tested and evaluated.* RESRAD-BUILD is unique as a tool for evaluating exposure from building contamination because it is the only model available that allows for consideration of specific source geometry. The lack of a comparable model prohibits the benchmarking of RESRAD-BUILD against other suitable models. However, some of the pathway components of the model have been compared against other, more simplistic single-pathway models (e.g., MICRO SHIELD). In the case of the RESRAD-RECYCLE code, although still in development, it is the only model currently available that suitably evaluates the scrap metal scenario.

2.2.1 RESRAD-BUILD Computer Code

The RESRAD-BUILD computer code is a pathway analysis model designed to evaluate the potential radiological dose incurred by an individual who works or lives in a building contaminated with residual radioactive material. The model was developed by Argonne National Laboratory for DOE (DOE 1996a). The transport of radioactive material inside a building from one compartment (or room) to another is calculated with an indoor air quality model that is integral to the overall model. The air quality model considers the transport of radioactive dust particles, and radon progeny due to air exchange, deposition and resuspension, and radioactive decay and ingrowth. Six exposure pathways are considered in the RESRAD-BUILD code:

- External exposure directly from the source.
- External exposure to radioactive materials deposited on the floor.
- External exposure due to air submersion.
- Inhalation of airborne radioactive particulates.
- Inhalation of aerosol indoor radon progeny.

*RESRAD Benchmarking Against Six Radiation Exposure Pathway Models (DOE 1994) and Verification of RESRAD-A Code for Implementing Residual Radioactive Material Guidelines (HNUS 1994) contain details documenting verification and benchmarking the RESRAD code.

- Inadvertent ingestion of radioactive material, either directly from the sources or from materials deposited on surfaces of the building compartments.

The code was used to evaluate exposure scenarios for continued current use and demolition of the Mexican Hat building. Detailed model input/output reports and related modeling technical information can be found in Appendices A and B, respectively. These exposure scenarios were "constructed" by adjusting the input parameters to the model to match the expected conditions for the scenario. For each scenario, the contamination concentration input parameter was iteratively varied to arrive at a concentration below which the potential radiological dose to a member of the public is less than 30 mrem in 1 year.

The version of code used to evaluate and calculate the DCL is RESRAD-BUILD for Windows, Version 2.1 (DOE 1996a).

2.2.2 RESRAD Computer Code

The RESRAD computer code is a pathway analysis model designed to evaluate the potential radiological dose incurred by an individual exposed to concentrations of radionuclides in soil. The model was developed by Argonne National Laboratory for DOE to implement DOE requirements (DOE Order 5400.5 and proposed Federal regulation 10 CFR 834) for developing site-specific guidelines for allowable residual concentrations of radionuclides in soil. The transport of radioactive material through the environment is calculated and the doses to potential receptors are determined in the model. The model considers the dose from exposure to radon progeny and compensates for radioactive decay and ingrowth over the evaluation period. All significant exposure pathways are considered in the RESRAD code, including:

- External exposure directly from contaminated soil.
- External exposure due to air submersion.
- Inhalation of airborne radioactive particulates.
- Inhalation of aerosol radon and radon progeny.
- Ingestion of radioactive material directly from the soil.
- Ingestion of radioactive material contained in food and drinking water supplies contaminated through transport of radionuclides in the environment.

The code was used to evaluate the potential exposure to members of the public resulting from the disposition of contaminated debris from the Mexican Hat building as discussed in Section 2.1.3.

The version of code used to evaluate and calculate the public dose from subsurface disposal of contaminated debris is RESRAD for Windows, Version 5.6 (DOE 1993).

2.2.3 RESRAD-RECYCLE Computer Code

To evaluate the potential effects of the structural members being recycled or reused, the computer code RESRAD-RECYCLE was used (DOE 1996b). RESRAD-RECYCLE is currently under development and the beta test version (Version 2.1 for Windows) was used on a pilot basis. RESRAD-RECYCLE is a

pathway analysis tool designed to calculate potential radiation doses and risks resulting from the recycling of radioactive scrap metal and the reuse of surface contaminated material and equipment. For modeling purposes, the recycle process is divided into six process steps: initial transportation of the scrap material, smelting, transportation of the smelted material to a fabrication plant, fabrication of the end product, product distribution, and public use of the product. From the six process steps, and based on preliminary modeling, the following recycle scenarios and exposures were evaluated.

Recycle Scenario A: *Reuse (including public reuse)*

- Continued use (or reuse) in the existing condition

As discussed in Section 2.1.4, these exposures bound the plausible future uses so that the findings can be extended to other uses such as institutional uses (e.g., school, offices, retail establishment, etc).

Recycle Scenario B: *Radionuclides Concentrated in the Slag—Recycle Worker Doses*

- Scrap Processor
- Slag Worker
- Ingot Caster

Preliminary modeling indicated that exposures to these recycle process workers represent plausible bounding exposures.

Recycle Scenario C: *Radionuclides Concentrated in the Ingot—Public Exposure to Materials Fabricated from Recycled Steel Members*

- Home Furniture
- Home Appliances
- Office Furniture

Again, preliminary modeling indicated that public exposures to these products represent plausible bounding exposures.

The RESRAD-RECYCLE code accounts for decay and ingrowth of radionuclides, dilution of scrap metal, radionuclide partitioning during smelting operations, and distribution of metal in the various consumer products. Likely radionuclide partitioning distributes the majority of contaminant activity to the slag. This case is presented as the most likely scenario and is used to bound the exposure to scrap metal recycle workers in Recycle Scenario B. Based on comments from regulatory agencies, the partitioning was intentionally biased to shunt more radionuclide into the public exposure scenario, Recycle Scenario C, (e.g., 90 percent of the activity to the ingot versus 1 percent default) than recommended. This partitioning exaggerates the potential future dose estimates to consumers obtaining products made from contaminated steel. The beta test code has not been formally released for use.

2.3 Uncertainties in the Development of the DCL

The major sources of uncertainty in the development of the DCL are associated with the selection of values for input to the computer modeling codes used (Section 2.2 discussed the computer codes used to evaluate the DCL). These computer codes are models seeking to portray reality and are best considered estimation tools subject to estimation error and uncertainties. The codes used are developed and maintained using a stringent version control process. The models or components of them are tested for mathematical correctness, verified, and benchmarked against comparable models when available. Modeling in and of itself implies a degree of uncertainty in that direct measurements or standards are typically not available to compare to modeled results. It is in such cases that risk managers resort to models. Perhaps the most important factor in building confidence in the predictions of a model is selecting the model which most closely approximates the scenario to be evaluated. With the selection of a suitable model, and configuring the model with realistic and most probable input parameters, the risk manager may be reasonably confident in the model's predictions. In configuring the models used in the derivation of the DCL, DOE strove to use input parameters that were site specific, measurable, and most closely approximated reality. When directly measurable parameters or site-specific parameters were not available, DOE intentionally introduced a bias to err on the side of safety by making conservative assumptions that affect dose estimates. This was done with the understanding that it would likely result in the overestimation of receptor doses. In this manner, the inherent uncertainty associated with the use of a model is regulated and directed by the biased selection of conservative input parameters so that it is unlikely that receptor dose will be greater than the model estimates. The major bounding assumptions responsible for producing conservative bias are identified in Table 2-6 with a qualitative remark indicating the affect on receptor dose estimates.

Table 2-6. Major Sources of Uncertainty in Computer Modeling

Model:Source of Uncertainty	Remark
RESRAD-BUILD: Assumes entire indoor building surfaces contaminated at 100,000 dpm/100cm ² .	Preliminary investigation data collected in the building suggest that the source concentration (amount of radioactivity) used in the model is higher than estimated concentrations. This potential overestimation of the source concentration is in part the result of using the model to derive a maximum allowable surface concentration level rather than to model the actual exposure conditions in the building. An overestimated source concentration should overstate receptor doses from all pathways.
RESRAD-BUILD: Continued use air exchange rate assumed to be 2.5 to 2.7 changes/hour is well below engineering computation of 3.5 to 25 changes per hour.	Underestimated ventilation rate should overstate receptor doses from inhalation, ingestion of dust, radon and submersion (affects continued use scenario).
RESRAD-BUILD: Fraction of time indoors (0.5) and release period (30 days) in the Demolition Scenario.	Conservative estimates of demolition worker exposure duration should overstate the excursion year doses.
RESRAD (Landfill): Assumes entire building surfaces contaminated at 100,000 dpm/100cm ² are deposited in a landfill.	Potentially overestimated source strength should overstate receptor doses from all pathways (e.g., plant uptake, groundwater, etc.).
RESRAD (Landfill): Assumes disposal in a substandard landfill with pathway factors biased to enhance contaminant migration.	Substandard disposal is not likely. Assumptions of substandard disposal and pathway factors (e.g., hydrogeologic and in-situ chemistry) result in potential overestimation of receptor doses.

Table 2-6 (continued). Major Sources of Uncertainty in Computer Modeling

Model:Source of Uncertainty	Remark
RESRAD (Landfill): Assumes local groundwater yield is adequate and accessible for residential use.	Semi-arid southwest conditions indicate that shallow groundwater use is not unlikely. Assumptions of groundwater yield and use result in potential overestimation of receptor doses.
RESRAD-RECYCLE: Assumes entire building structural steel members contaminated at 100,000 dpm/100cm ² are used in recycle process.	Potentially overestimated source strength should overstate receptor doses from all recycle pathways (e.g., Office, Residential, etc).
RESRAD-RECYCLE, Case C: Assumes 90 percent of the activity inventory and 90 percent of the mass are integrated into recycled products.	Based on the observed state of the building residuals (oxidized or dust-like deposition), assuming 90 percent the activity inventory and mass into products results in a potential overestimate of recycle product receptor doses (most of the oxidized metal and dirt-like residual would go to the slag).
RESRAD - All: accounts for the ingrowth and dose contributions from daughter nuclides (including radon and its progeny).	Technically, the dose contribution from radon and its progeny is not required to be considered in demonstrating compliance with the public dose limits prescribed in Federal and State regulations. The models do account for this contribution and thus conservatively bias the models' predictions.
RESRAD - All: Assumes reasonable maximum exposure (RME) factors.	Assuming RME receptor characteristics is conservative and consistent with EPA guidance (EPA 1989a). Coupling RME receptor characteristics with the potentially overstated source term and conservative exposure pathway assumptions results in highly conservative dose estimates.

Review of Table 2-6 indicates that the major assumptions affecting receptor dose estimates (source strength, pathway migration, and receptor exposure characteristics) have been overstated to ensure a conservative bias. Risk management decisions based upon the results of these modeling estimates will reflect this conservative bias and likely err on the side of safety. A summary of the modeling results is presented in Section 2.4.

2.4 Proposed Residual Radioactive Material Guidelines

2.4.1 Surface Contamination Level

The pathway exposure analysis using RESRAD-BUILD in both the continued current-use and demolition scenarios demonstrates that a site-specific surface contamination level of 100,000 dpm/100 cm² uniformly distributed over the interior building surfaces is protective and acceptable. This surface concentration results in potential radiological doses to workers in the Mexican Hat building (continued current-use scenario) of 3 mrem or less in 1 year. For a construction worker involved in demolishing the contaminated structure, the same concentration results in potential doses of 20 mrem or less in 1 year.

The continued-use scenario represents a steady-state exposure in which the annual dose potential is less than the primary public dose limit of 100 mrem per year, less than the target annual dose constraint value of 15 mrem per year, and consistent with DOE's as-low-as-reasonably-achievable philosophy of

reducing potential doses to the public to just a few millirem per year. It is important to note that the 22-mrem potential dose calculated for the construction worker occurs in just 30 days, and represents the maximum reasonable estimate of an excursion dose. Thus, even the excursion year dose projection is within the primary public dose limit of 100 mrem per year and the target excursion benchmark dose constraint value of 30 mrem in 1 year. And, since the excursion dose would be received only one time and only over 30 days, the overall impact to cumulative public dose is minimal.

Another important factor to consider in assessing the appropriateness of the DCL is the assumption that this concentration is uniformly distributed over the interior surface of the building. This is an extremely unlikely scenario that was used to bound the potential. It is expected that less than half of the total building surfaces are contaminated and that the average contamination concentrations over the surfaces that are contaminated will be less than the DCL (possibly in the range of 10,000 to 15,000 dpm/100 cm²).

The results of computer modeling of each of the identified scenarios (see Section 2.3.3) demonstrate that a DCL of 100,000 dpm/100 cm² results in potential public doses well below the benchmark doses provided.

2.4.2 Radon Exposure

Although the dose contribution from radon and its progeny are not required to be considered in demonstrating compliance with applicable public dose limits (see proposed EPA guidance, *Federal Register* Vol. 59, No. 246, p. 66415 and proposed DOE rule, 10 CFR 834.101, *Federal Register* Vol. 58; No. 56, p. 16286), DOE does consider the need to protect persons from excessive exposure to radon. Because the dose limit criteria (and consequently the benchmark dose constraints used to derive the DCL) do not include dose contributions from indoor radon, either from naturally occurring radium-bearing soils, residual radioactive material in the form of fill material situated beneath or near the building, or surficially deposited contaminants, DOE proposes establishing an independent criterion to limit exposure to radon.

The maximum permissible radon concentration in the Mexican Hat building is set at 4 pCi/L (0.02 WL at 50 percent equilibrium), which is the level recommended to the public by the EPA and Centers for Disease Control in *A Citizen's Guide to Radon* (EPA 1992).

2.4.3 Results

2.4.3.1 Continued Current Use of the Building

Table 2-7 presents the estimated radiological doses for *workers* under the Continued Current-Use Scenario.

Table 2-7. Continued Current-Use Scenario Highest Estimated Dose (mrem/year)

Year 1	Year 2	Year 5	Year 20
2.82	2.82	2.82	2.78

Benchmark Dose = 15 mrem/year

Maximum Allowable Dose = 100 mrem/year

The RESRAD-BUILD detailed printouts (Appendix A) indicate that the main contributor to these doses is external gamma (i.e., penetrating) radiation from uranium-238.

2.4.3.2 Building Demolition

Table 2-8 presents the estimated radiological doses for **workers** under the 30-day Building Demolition Scenario.

Table 2-8. Building Demolition Scenario Highest Estimated Dose (mrem/year)

30-Day Exposure	
22 mrem/year	
Excursion Benchmark = 30 mrem/year	
Maximum Allowable Dose = 100 mrem/year	

The RESRAD-BUILD detailed printouts (Appendix B) indicates that the main contributor to these doses is internal radiation from inhalation of dust containing uranium-234 and -238.

2.4.3.3 Landfill Disposal

Table 2-9 presents the predicted radiological doses to **residents** from landfill disposal of the building debris.

Table 2-9. Residential Exposure From Landfill Disposal Scenario (mrem/year)

Case A: Baseline Rural Landfill					
5 Years	10 Years	30 Years	100 Years	500 Years	1000 Years
1.2E-7	4.8E-6	4.4E-5	5.1E-4	1.6E-2	8.3E-2
Case B: The Extreme Baseline Rural Landfill—Exaggerated Source and Infiltration					
5 Years	10 Years	30 Years	100 Years	500 Years	1000 Years
1.2E-5	4.8E-5	4.4E-4	4.9E-3	2.5	10.4
Case C: The Baseline Rural Landfill—Shallow Disposal					
5 Years	10 Years	30 Years	100 Years	500 Years	1000 Years
5.8E-2	5.8E-2	6.0E-2	6.6E-2	0.20	0.21

Benchmark Dose = 15 mrem/year

Maximum Allowable Dose = 100 mrem/year

Comparing estimated residential doses with the benchmark and maximum allowable doses indicates that landfill disposal of building materials contaminated at the DCL (100,000 dpm/100 cm²) will not produce unacceptable doses to a resident who occupies a house on top of the landfill and consumes affected foods and groundwater.

Individual dose profiles in Appendix C indicate the following principal contributors:

- Case A – Inhalation of radon.
- Case B – Inhalation of radon in the first 100 years, ingestion of groundwater in the years after 100.
- Case C – Ingestion of plants in the first 100 years, ingestion of plants and inhalation of dust in the years after 100.

2.4.3.4 Recycling or Reusing Potentially Contaminated Structural Steel

Table 2-10 presents the predicted radiological doses to the public and occupational receptors from exposure to recycled or reused structural steel members from the building.

Table 2-10. Public and Worker Exposure From Recycled or Reused Structural Steel (mrem/year)

Scenario A—Reuse			
<i>Building Reuse</i>	2.1		
Scenario B—Reasonable Maximum Exposure to Recycle Workers (90% Slag, 8% Ingot)			
<i>Scrap Cutter</i>	< 0.1	<i>Home Furniture</i>	< 0.1
<i>Scrap Processor</i>	< 0.1	<i>Office Furniture</i>	< 0.1
<i>Slag Worker</i>	< 0.1	<i>Home Appliance</i>	< 0.1
<i>Ingot Caster</i>	< 0.1		
Scenario C—Reasonable Maximum Public Exposure to Materials Fabricated from Recycled Steel (90% Ingot, 8% Slag)			
<i>Scrap Cutter</i>	< 0.1	<i>Home Furniture</i>	< 0.1
<i>Scrap Processor</i>	< 0.1	<i>Office Furniture</i>	< 0.1
<i>Slag Worker</i>	< 0.1	<i>Home Appliance</i>	< 0.1
<i>Ingot Caster</i>	< 0.1		

Benchmark Dose = 10 mrem/year

Maximum Allowable Dose = 100 mrem/year

Comparing the above estimated doses with the benchmark and maximum allowable doses indicates that reusing and/or recycling the building materials contaminated at the DCL will not produce unacceptable doses to the public or workers.

The detailed computer outputs in Appendix D indicate that external gamma is the principal source of exposure in Recycle Scenarios A and C and inhalation is the main source of exposure in Recycle Scenario B.

3.0 Development of Mexican Hat Building Sampling Plan

If the surfaces of the Mexican Hat building have an average residual radioactive contamination level of 100,000 dpm/100cm² or below, this will result in doses to workers and members of the public that will be protective of human health. In addition, annual average indoor air radon concentration must be no greater than 4 pCi/L (0.02 WL) to be protective of human health.

Data will be collected using an approved sampling and analysis plan (SAP) developed in accordance with the EPA's data quality objective process. This data will be used to provide risk managers with picture of the residual radioactive contamination levels present on the building surfaces and demonstrate compliance with the DCL and radon concentration limits or the need for remedial action.

The SAP will be provided for regulator review and comment under separate cover.

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Appendix A

Continued Current-Use Scenario RESRAD-BUILD Report

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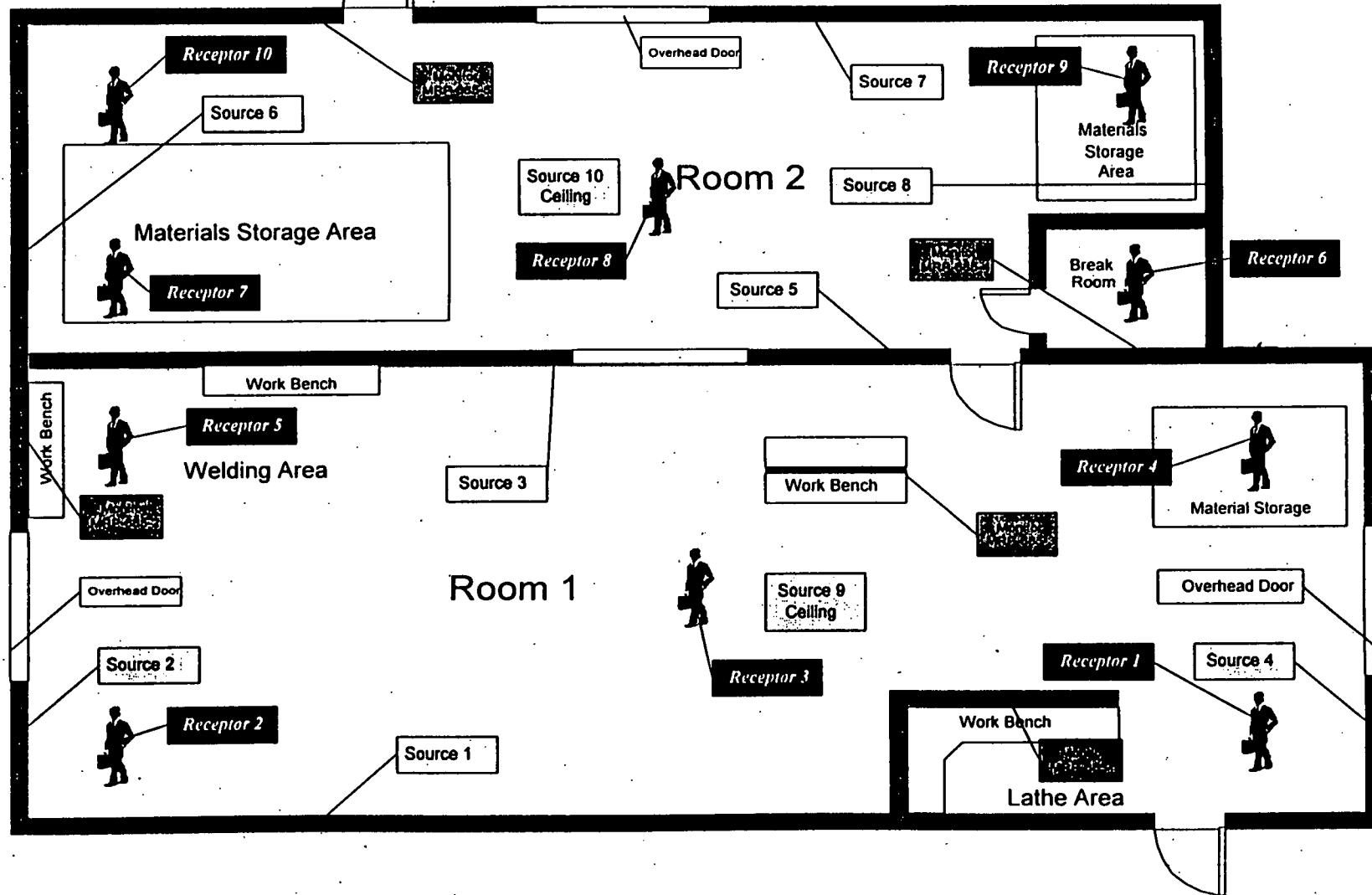
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Continued Use Scenario

MS-00685-CS, Fabrication Shop Buildings
Suspect Contaminated Buildings from Mexican Hat Mill



** RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:51 Page: 0- 1 : 2 **
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.I.

RESRAD-BUILD Input Parameters

Number of Sources : 10
Number of Receptors: 10
Total Time : 2.400000E+02 days
Fraction Inside : 8.500000E-01

Receptor Information

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m ³ /day]	Ingestion(Dust) [m ² /hr]
1	1	33.600	3.000	1.000	1.000	1.80E+01	1.00E-04
2	1	3.000	3.000	1.000	1.000	1.80E+01	1.00E-04
3	1	18.300	9.150	1.000	1.000	1.80E+01	1.00E-04
4	1	33.600	15.300	1.000	1.000	1.80E+01	1.00E-04
5	1	3.000	15.300	1.000	1.000	1.80E+01	1.00E-04
6	2	27.500	21.300	1.000	1.000	1.80E+01	1.00E-04
7	2	3.000	21.300	1.000	1.000	1.80E+01	1.00E-04
8	2	15.250	27.800	1.000	1.000	1.80E+01	1.00E-04
9	2	27.500	34.200	1.000	1.000	1.80E+01	1.00E-04
10	2	3.000	34.200	1.000	1.000	1.80E+01	1.00E-04

Building Information

Building Air Exchange Rate: 8.00E-01 1/hr

Height[m] Air Exchanges [m³/hr]
Area [m²]

	*****	*****
	*	*
	*	*
	*	*
H2:	10.360	Room 2 <=Q02: 5.50E+03
	*	*
	*	Q20 : 5.40E+03
	*	*
Area	576.000	LAMBDA: 2.70E+00
	*	*
	*	*
	/ \ N12:-1.00E+02	Q21 : 1.07E+04
	** *****	Q12 : 1.06E+04
	*	*
	*	*
H1:	8.800	Room 1 <=Q01: 3.99E+03
	*	*
	*	Q10 : 4.09E+03
	*	*
	*	*
Area	670.000	LAMBDA: 2.50E+00
	*	*
	*	*
	*****	*****

Deposition velocity: 1.00E-02 [m/s] Resuspension Rate: 5.00E-07 [1/s]

* RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:51 Page: 0- 3 : 4 **
title : Youngs
input File : C:\RESBLD\JYBASE1D.I

Source Information

Source: 1

Location:: Room : 1 x: 18.20 y: 0.00 z: 4.40[m]
Geometry:: Type: Area Area:3.22E+02 [m2] Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-02
Removable fraction: 1.000E-03
Time to Remove: 7.300E+03 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m2]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m2)]	External (Volume) [mrem/yr/ (pCi/m3)]	Submersion [mrem/yr/ (pCi/m3)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09

Source: 2

Location:: Room : 1 x: 0.00 y: 9.15 z: 4.40[m]
Geometry:: Type: Area Area:1.61E+02 [m2] Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-02
Removable fraction: 1.000E-03
Time to Remove: 7.300E+03 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m2]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m2)]	External (Volume) [mrem/yr/ (pCi/m3)]	Submersion [mrem/yr/ (pCi/m3)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09

tle : Youngs
put File : C:\RESBLD\JYBASE1D.I

ource: 3

Location:: Room : 1 x: 18.30 y: 18.30 z: 4.40[m]
Geometry:: Type: Area Area:3.22E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

 Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m2]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m2)]	External (Volume) [mrem/yr/ (pCi/m3)]	Submersion [mrem/yr/ (pCi/m3)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09

Source: 4

Location:: Room : 1 x: 36.60 y: 9.15 z: 4.40[m]
Geometry:: Type: Area Area: 1.61E+02 [m²] Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-02

Removable fraction: 1.000E-03

Time to Remove: 7.300E+03 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion	Inhalation	External (Surface)	External (Volume)	Submersion
[pCi/m ²]	[mrem/pCi]	[mrem/pCi]	[mrem/yr/ (pCi/m ²)]	[mrem/yr/ (pCi/m ³)]	[mrem/yr/ (pCi/m ³)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09

* RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:51 Page: 0- 3 : 8 **
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.I

Source: 5

Location:: Room : 2 x: 15.25 y: 18.30 z: 5.20[m]
Geometry:: Type: Area Area: 3.15E+02 [m²] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

 Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m ²]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m ²)]	External (Volume) [mrem/yr/ (pCi/m ³)]	Submersion [mrem/yr/ (pCi/m ³)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09

Source: 6
Location:: Room : 2 x: 0.00 y: 27.80 z: 5.18[m]
Geometry:: Type: Area Area: 1.95E+02 [m²] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m ²]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m ²)]	External (Volume) [mrem/yr/ (pCi/m ³)]	Submersion [mrem/yr/ (pCi/m ³)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09

RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:51 Page: 0- 3 : 10 **
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.I

Source: 7

Location:: Room : 2 x: 15.25 y: 37.20 z: 5.18[m]
Geometry:: Type: Area Area: 3.15E+02 [m2] Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-02
Removable fraction: 1.000E-03
Time to Remove: 7.300E+03 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m2]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m2)]	External (Volume) [mrem/yr/ (pCi/m3)]	Submersion [mrem/yr/ (pCi/m3)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09

Source: 8

Location:: Room : 2 x: 30.50 y: 27.80 z: 5.18[m]
Geometry:: Type: Area Area:1.95E+02 [m2] Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-02
Removable fraction: 1.000E-03
Time to Remove: 7.300E+03 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m2]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m2)]	External (Volume) [mrem/yr/ (pCi/m3)]	Submersion [mrem/yr/ (pCi/m3)]	
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08	1.600E-04
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07	9.030E-04
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10	8.930E-07
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07	2.010E-04
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10	2.040E-06
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06	2.160E-03
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06	1.040E-02
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09	1.430E-05

* RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:51 Page: 0- 3 : 12 **
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.I

Source: 9

Location:: Room : 1 x: 18.30 y: 9.15 z: 8.80[m]
Geometry:: Type: Area Area: 6.70E+02 [m2] Direction: z
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

 Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m2]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m2)]	External (Volume) [mrem/yr/ (pCi/m3)]	Submersion [mrem/yr/ (pCi/m3)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09

AD-BLD Program output, version 2.10 06/11/97 12:51 Page: 3 13
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.I

Source: 10

Location:: Room : 2 x: 15.25 y: 27.80 z: 10.36[m]
Geometry:: Type: Area Area: 5.76E+02 [m²] Direction: z

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-02
Removable fraction: 1.000E-03
Time to Remove: 7.300E+03 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m ²]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m ²)]	External (Volume) [mrem/yr/ (pCi/m ³)]	Submersion [mrem/yr/ (pCi/m ³)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09

RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:52 Page: 1- 1 : 14 **
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 0.000000 years.

Assessment for Time: 1
Time = 0.00E+00 yr

Source Information

Source: 1
Location:: Room : 1 x: 18.20 y: 0.00 z: 4.40 [m]
Geometry:: Type: Area Area: 3.22E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.150E+06
	U-235	1.000E+05
	U-234	2.260E+06
	PA-231	0.000E+00
	TH-230	0.000E+00
	AC-227	0.000E+00
	RA-226	0.000E+00
	PB-210	0.000E+00

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 0.000000 years

Source: 2

Location:: Room : 1 x: 0.00 y: 9.15 z: 4.40 [m]
Geometry:: Type: Area Area:1.61E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.150E+06
	U-235	1.000E+05
	U-234	2.260E+06
	PA-231	0.000E+00
	TH-230	0.000E+00
	AC-227	0.000E+00
	RA-226	0.000E+00
	PB-210	0.000E+00

Source: 3

Location:: Room : 1 x: 18.30 y: 18.30 z: 4.40 [m]
Geometry:: Type: Area Area:3.22E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.150E+06
	U-235	1.000E+05
	U-234	2.260E+06
	PA-231	0.000E+00
	TH-230	0.000E+00
	AC-227	0.000E+00
	RA-226	0.000E+00
	PB-210	0.000E+00

* RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:52 Page: 1- 1 : 16 ***
title : Youngs
Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 0.000000 years

source: 4

Location:: Room : 1 x: 36.60 y: 9.15 z: 4.40 [m]
Geometry:: Type: Area Area: 1.61E+02 [m²] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.150E+06
	U-235	1.000E+05
	U-234	2.260E+06
	PA-231	0.000E+00
	TH-230	0.000E+00
	AC-227	0.000E+00
	RA-226	0.000E+00
	PB-210	0.000E+00

source: 5

Location:: Room : 2 x: 15.25 y: 18.30 z: 5.20 [m]
Geometry:: Type: Area Area: 3.15E+02 [m²] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m ²]
	U-238	2.150E+06
	U-235	1.000E+05
	U-234	2.260E+06
	PA-231	0.000E+00
	TH-230	0.000E+00
	AC-227	0.000E+00
	RA-226	0.000E+00
	PB-210	0.000E+00

RESRAD-BUILD Program Output, Version 2.10 08/11/97 12:52 Page: 1 17
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 0.000000 years

Source: 6

Location:: Room : 2 x: 0.00 y: 27.80 z: 5.18 [m]
Geometry:: Type: Area Area:1.95E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.150E+06
 U-235 1.000E+05
 U-234 2.260E+06
 PA-231 0.000E+00
 TH-230 0.000E+00
 AC-227 0.000E+00
 RA-226 0.000E+00
 PB-210 0.000E+00

Source: 7

Location:: Room : 2 x: 15.25 y: 37.20 z: 5.18 [m]
Geometry:: Type: Area Area:3.15E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.150E+06
 U-235 1.000E+05
 U-234 2.260E+06
 PA-231 0.000E+00
 TH-230 0.000E+00
 AC-227 0.000E+00
 RA-226 0.000E+00
 PB-210 0.000E+00

* RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:52 Page: 1- 1 : 18 **
title : Youngs
input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 0.000000 years

Source: 8

Location:: Room : 2 x: 30.50 y: 27.80 z: 5.18 [m]
Geometry:: Type: Area Area:1.95E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.150E+06
	U-235	1.000E+05
	U-234	2.260E+06
	PA-231	0.000E+00
	TH-230	0.000E+00
	AC-227	0.000E+00
	RA-226	0.000E+00
	PB-210	0.000E+00

Source: 9

Location:: Room : 1 x: 18.30 y: 9.15 z: 8.80 [m]
Geometry:: Type: Area Area:6.70E+02 [m2] Direction: z
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.150E+06
	U-235	1.000E+05
	U-234	2.260E+06
	PA-231	0.000E+00
	TH-230	0.000E+00
	AC-227	0.000E+00
	RA-226	0.000E+00
	PB-210	0.000E+00

* AD-BLD Program Input, Version 2.10 05/11/94 12:52 Page: 1 19
title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 0.000000 years

Source: 10

Location:: Room : 2 x: 15.25 y: 27.80 z: 10.36 [m]
Geometry:: Type: Area Area: 5.76E+02 [m2] Direction: z
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.150E+06
 U-235 1.000E+05
 U-234 2.260E+06
 PA-231 0.000E+00
 TH-230 0.000E+00
 AC-227 0.000E+00
 RA-226 0.000E+00
 PB-210 0.000E+00

Input File : C:\RESSARD\JYBASE1D.IEVALUATION Time: 0.000000 Years

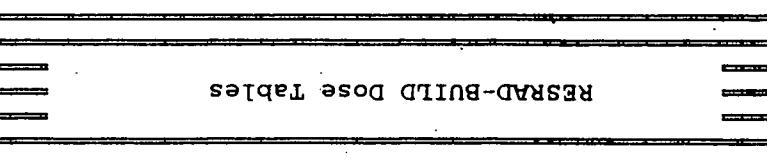
20 **

	Source	Total								
1	1.1E-01	5.6E-01	1.1E-01	5.6E-02	1.1E-02	3.8E-02	5.3E-02	3.0E-02	5.3E-02	1.6E+00
2	2.5E-01	2.0E-02	1.1E-01	5.6E-01	8.6E-02	3.8E-01	3.3E-02	2.0E-02	3.6E-01	2.4E+00
3	3.9E-01	6.8E-02	3.9E-01	1.2E-01	5.3E-02	3.3E-02	2.1E-02	5.4E-02	6.3E-01	1.2E-01
4	1.1E-01	2.0E-01	6.8E-01	1.6E-01	4.4E-02	2.1E-01	5.7E-02	2.0E-02	3.8E-01	1.8E-01
5	5.6E-01	2.0E-01	5.6E-01	1.6E-01	4.4E-02	2.1E-01	5.7E-02	2.0E-02	3.8E-01	1.8E-01
6	1.1E-01	2.5E-01	1.1E-01	2.0E-01	7.1E-02	3.8E-02	2.0E-02	3.0E-02	3.8E-01	2.3E+00
7	8.3E-02	2.6E-02	7.1E-02	1.1E-01	3.8E-01	1.1E-01	3.8E-02	1.1E-01	3.8E-01	2.3E+00
8	6.9E-02	1.8E-01	1.8E-02	3.8E-01	1.1E-01	3.8E-01	1.1E-01	3.8E-01	1.1E-01	2.3E+00
9	3.5E-02	1.8E-02	1.3E-01	3.0E-02	3.5E-02	1.1E-02	3.5E-02	1.1E-01	3.5E-01	1.9E+00
10	3.2E-02	4.3E-02	1.0E-02	1.4E-01	3.8E-01	6.1E-01	3.8E-01	1.1E-01	3.5E-01	2.1E+01

(rem)

RECEPATOR Point-Source Doses

RESSARD-BUILD Dose Tables



Title : Youngs

Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 0.000000 years

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	2.41E-01	1.67E-07	5.86E-10	4.97E-03	7.41E-26	2.71E-05
2	2.48E-01	1.67E-07	5.86E-10	4.97E-03	7.41E-26	2.71E-05
3	3.81E-01	1.67E-07	5.86E-10	4.97E-03	7.41E-26	2.71E-05
4	1.01E-01	1.67E-07	5.86E-10	4.97E-03	7.41E-26	2.71E-05
5	1.02E-01	1.67E-07	5.86E-10	4.97E-03	7.41E-26	2.71E-05
6	7.99E-02	1.07E-07	3.87E-10	3.28E-03	7.32E-26	1.78E-05
7	6.56E-02	1.07E-07	3.87E-10	3.28E-03	7.32E-26	1.78E-05
8	5.26E-02	1.07E-07	3.87E-10	3.28E-03	7.32E-26	1.78E-05
9	3.19E-02	1.07E-07	3.87E-10	3.28E-03	7.32E-26	1.78E-05
10	2.89E-02	1.07E-07	3.87E-10	3.28E-03	7.32E-26	1.78E-05
Total	1.33E+00	1.37E-06	4.87E-09	4.13E-02	7.37E-25	2.24E-04

Source: 2

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.76E-02	8.34E-08	2.93E-10	2.49E-03	3.71E-26	1.35E-05
2	5.61E-01	8.34E-08	2.93E-10	2.49E-03	3.71E-26	1.35E-05
3	6.54E-02	8.34E-08	2.93E-10	2.49E-03	3.71E-26	1.35E-05
4	1.76E-02	8.34E-08	2.93E-10	2.49E-03	3.71E-26	1.35E-05
5	5.61E-01	8.34E-08	2.93E-10	2.49E-03	3.71E-26	1.35E-05
6	2.39E-02	5.36E-08	1.93E-10	1.64E-03	3.66E-26	8.92E-06
7	1.79E-01	5.36E-08	1.93E-10	1.64E-03	3.66E-26	8.92E-06
8	4.23E-02	5.36E-08	1.93E-10	1.64E-03	3.66E-26	8.92E-06
9	1.60E-02	5.36E-08	1.93E-10	1.64E-03	3.66E-26	8.92E-06
10	4.17E-02	5.36E-08	1.93E-10	1.64E-03	3.66E-26	8.92E-06
Total	1.52E+00	6.85E-07	2.43E-09	2.06E-02	3.68E-25	1.12E-04

Source: 3

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.02E-01	1.67E-07	5.86E-10	4.97E-03	7.41E-26	2.71E-05
2	1.02E-01	1.67E-07	5.86E-10	4.97E-03	7.41E-26	2.71E-05
3	3.81E-01	1.67E-07	5.86E-10	4.97E-03	7.41E-26	2.71E-05
4	2.45E-01	1.67E-07	5.86E-10	4.97E-03	7.41E-26	2.71E-05
5	2.45E-01	1.67E-07	5.86E-10	4.97E-03	7.41E-26	2.71E-05
6	7.06E-01	1.07E-07	3.87E-10	3.28E-03	7.32E-26	1.78E-05
7	2.45E-01	1.07E-07	3.87E-10	3.28E-03	7.32E-26	1.78E-05
8	3.49E-01	1.07E-07	3.87E-10	3.28E-03	7.32E-26	1.78E-05
9	1.30E-01	1.07E-07	3.87E-10	3.28E-03	7.32E-26	1.78E-05
10	9.73E-02	1.07E-07	3.87E-10	3.28E-03	7.32E-26	1.78E-05
Total	2.60E+00	1.37E-06	4.87E-09	4.13E-02	7.37E-25	2.24E-04

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 0.000000 years

Source: 4

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	5.61E-01	8.34E-08	2.93E-10	2.49E-03	3.71E-26	1.35E-05
2	1.76E-02	8.34E-08	2.93E-10	2.49E-03	3.71E-26	1.35E-05
3	6.54E-02	8.34E-08	2.93E-10	2.49E-03	3.71E-26	1.35E-05
4	5.61E-01	8.34E-08	2.93E-10	2.49E-03	3.71E-26	1.35E-05
5	1.76E-02	8.34E-08	2.93E-10	2.49E-03	3.71E-26	1.35E-05
6	1.10E-01	5.36E-08	1.93E-10	1.64E-03	3.66E-26	8.92E-06
7	1.61E-02	5.36E-08	1.93E-10	1.64E-03	3.66E-26	8.92E-06
8	2.88E-02	5.36E-08	1.93E-10	1.64E-03	3.66E-26	8.92E-06
9	3.70E-02	5.36E-08	1.93E-10	1.64E-03	3.66E-26	8.92E-06
10	1.19E-02	5.36E-08	1.93E-10	1.64E-03	3.66E-26	8.92E-06
Total	1.43E+00	6.85E-07	2.43E-09	2.06E-02	3.68E-25	1.12E-04

Source: 5

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	8.28E-02	1.09E-07	3.82E-10	3.24E-03	6.83E-26	1.76E-05
2	1.16E-01	1.09E-07	3.82E-10	3.24E-03	6.83E-26	1.76E-05
3	3.54E-01	1.09E-07	3.82E-10	3.24E-03	6.83E-26	1.76E-05
4	1.57E-01	1.09E-07	3.82E-10	3.24E-03	6.83E-26	1.76E-05
5	3.76E-01	1.09E-07	3.82E-10	3.24E-03	6.83E-26	1.76E-05
6	3.76E-01	1.45E-07	5.24E-10	4.44E-03	6.77E-26	2.42E-05
7	3.76E-01	1.45E-07	5.24E-10	4.44E-03	6.77E-26	2.42E-05
8	3.48E-01	1.45E-07	5.24E-10	4.44E-03	6.77E-26	2.42E-05
9	1.10E-01	1.45E-07	5.24E-10	4.44E-03	6.77E-26	2.42E-05
10	1.10E-01	1.45E-07	5.24E-10	4.44E-03	6.77E-26	2.42E-05
Total	2.41E+00	1.27E-06	4.53E-09	3.84E-02	6.80E-25	2.09E-04

Source: 6

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.44E-02	6.72E-08	2.36E-10	2.00E-03	4.23E-26	1.09E-05
2	5.10E-02	6.72E-08	2.36E-10	2.00E-03	4.23E-26	1.09E-05
3	4.18E-02	6.72E-08	2.36E-10	2.00E-03	4.23E-26	1.09E-05
4	1.93E-02	6.72E-08	2.36E-10	2.00E-03	4.23E-26	1.09E-05
5	2.02E-01	6.72E-08	2.36E-10	2.00E-03	4.23E-26	1.09E-05
6	3.20E-02	8.99E-08	3.24E-10	2.75E-03	4.19E-26	1.50E-05
7	5.97E-01	8.99E-08	3.24E-10	2.75E-03	4.19E-26	1.50E-05
8	1.09E-01	8.99E-08	3.24E-10	2.75E-03	4.19E-26	1.50E-05
9	3.21E-02	8.99E-08	3.24E-10	2.75E-03	4.19E-26	1.50E-05
10	6.07E-01	8.99E-08	3.24E-10	2.75E-03	4.19E-26	1.50E-05
Total	1.71E+00	7.85E-07	2.80E-09	2.38E-02	4.21E-25	1.29E-04

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 0.000000 years

Source: 7

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	2.64E-02	1.09E-07	3.82E-10	3.24E-03	6.83E-26	1.76E-05
2	2.98E-02	1.09E-07	3.82E-10	3.24E-03	6.83E-26	1.76E-05
3	5.03E-02	1.09E-07	3.82E-10	3.24E-03	6.83E-26	1.76E-05
4	5.41E-02	1.09E-07	3.82E-10	3.24E-03	6.83E-26	1.76E-05
5	6.78E-02	1.09E-07	3.82E-10	3.24E-03	6.83E-26	1.76E-05
6	1.10E-01	1.45E-07	5.24E-10	4.44E-03	6.77E-26	2.42E-05
7	1.10E-01	1.45E-07	5.24E-10	4.44E-03	6.77E-26	2.42E-05
8	3.54E-01	1.45E-07	5.24E-10	4.44E-03	6.77E-26	2.42E-05
9	3.77E-01	1.45E-07	5.24E-10	4.44E-03	6.77E-26	2.42E-05
10	3.77E-01	1.45E-07	5.24E-10	4.44E-03	6.77E-26	2.42E-05
Total	1.56E+00	1.27E-06	4.53E-09	3.84E-02	6.80E-25	2.09E-04

Source: 8

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	5.11E-02	6.72E-08	2.36E-10	2.00E-03	4.23E-26	1.09E-05
2	1.94E-02	6.72E-08	2.36E-10	2.00E-03	4.23E-26	1.09E-05
3	6.12E-02	6.72E-08	2.36E-10	2.00E-03	4.23E-26	1.09E-05
4	2.02E-01	6.72E-08	2.36E-10	2.00E-03	4.23E-26	1.09E-05
5	2.84E-02	6.72E-08	2.36E-10	2.00E-03	4.23E-26	1.09E-05
6	5.97E-01	8.99E-08	3.24E-10	2.75E-03	4.19E-26	1.50E-05
7	3.20E-02	8.99E-08	3.24E-10	2.75E-03	4.19E-26	1.50E-05
8	1.09E-01	8.99E-08	3.24E-10	2.75E-03	4.19E-26	1.50E-05
9	6.07E-01	8.99E-08	3.24E-10	2.75E-03	4.19E-26	1.50E-05
10	3.21E-02	8.99E-08	3.24E-10	2.75E-03	4.19E-26	1.50E-05
Total	1.74E+00	7.85E-07	2.80E-09	2.38E-02	4.21E-25	1.29E-04

Source: 9

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	3.68E-01	3.47E-07	1.22E-09	1.03E-02	1.54E-25	5.63E-05
2	3.68E-01	3.47E-07	1.22E-09	1.03E-02	1.54E-25	5.63E-05
3	7.31E-01	3.47E-07	1.22E-09	1.03E-02	1.54E-25	5.63E-05
4	3.68E-01	3.47E-07	1.22E-09	1.03E-02	1.54E-25	5.63E-05
5	3.68E-01	3.47E-07	1.22E-09	1.03E-02	1.54E-25	5.63E-05
6	4.11E-01	2.23E-07	8.04E-10	6.82E-03	1.52E-25	3.71E-05
7	2.78E-01	2.23E-07	8.04E-10	6.82E-03	1.52E-25	3.71E-05
8	2.95E-01	2.23E-07	8.04E-10	6.82E-03	1.52E-25	3.71E-05
9	1.52E-01	2.23E-07	8.04E-10	6.82E-03	1.52E-25	3.71E-05
10	1.25E-01	2.23E-07	8.04E-10	6.82E-03	1.52E-25	3.71E-05
Total	3.46E+00	2.85E-06	1.01E-08	8.59E-02	1.53E-24	4.67E-04

* RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:52 Page: 1- 3 : 24 **
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 0.000000 years

Source: 10

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	9.28E-02	1.98E-07	6.98E-10	5.92E-03	1.25E-25	3.22E-05
2	1.15E-01	1.98E-07	6.98E-10	5.92E-03	1.25E-25	3.22E-05
3	2.25E-01	1.98E-07	6.98E-10	5.92E-03	1.25E-25	3.22E-05
4	1.72E-01	1.98E-07	6.98E-10	5.92E-03	1.25E-25	3.22E-05
5	2.53E-01	1.98E-07	6.98E-10	5.92E-03	1.25E-25	3.22E-05
6	3.37E-01	2.66E-07	9.58E-10	8.12E-03	1.24E-25	4.42E-05
7	3.37E-01	2.66E-07	9.58E-10	8.12E-03	1.24E-25	4.42E-05
8	5.51E-01	2.66E-07	9.58E-10	8.12E-03	1.24E-25	4.42E-05
9	3.38E-01	2.66E-07	9.58E-10	8.12E-03	1.24E-25	4.42E-05
10	3.38E-01	2.66E-07	9.58E-10	8.12E-03	1.24E-25	4.42E-05
Total	2.76E+00	2.32E-06	8.28E-09	7.02E-02	1.24E-24	3.82E-04

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 0.000000 years

Nuclide Detail of Doses

{mrem}

Source: 1

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
J-238											
U-238	1.92E-01	1.98E-01	3.02E-01	8.23E-02	8.32E-02	6.48E-02	5.34E-02	4.33E-02	2.69E-02	2.46E-02	1.07E+00
J-235											
U-235	5.05E-02	5.20E-02	7.98E-02	2.11E-02	2.13E-02	1.64E-02	1.35E-02	1.07E-02	6.42E-03	5.83E-03	2.78E-01
J-234											
U-234	3.49E-03	3.52E-03	4.09E-03	2.99E-03	2.99E-03	2.00E-03	1.95E-03	1.90E-03	1.82E-03	1.81E-03	2.66E-02

Source: 2

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
J-238											
U-238	1.51E-02	4.42E-01	5.28E-02	1.51E-02	4.42E-01	1.98E-02	1.42E-01	3.41E-02	1.34E-02	3.35E-02	1.21E+00
J-235											
U-235	3.56E-03	1.18E-01	1.35E-02	3.56E-03	1.18E-01	4.88E-03	3.77E-02	8.81E-03	3.27E-03	8.80E-03	3.20E-01
J-234											
U-234	1.36E-03	3.47E-03	1.55E-03	1.36E-03	3.47E-03	9.40E-04	1.55E-03	1.02E-03	9.13E-04	1.02E-03	1.66E-02

Source: 3

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
J-238											
U-238	8.27E-02	8.27E-02	3.02E-01	1.95E-01	1.95E-01	5.57E-01	1.94E-01	2.77E-01	1.05E-01	7.83E-02	2.07E+00
J-235											
U-235	2.12E-02	2.12E-02	7.98E-02	5.13E-02	5.13E-02	1.48E-01	5.12E-02	7.30E-02	2.71E-02	2.02E-02	5.44E-01
J-234											
U-234	2.99E-03	2.99E-03	4.09E-03	3.51E-03	3.51E-03	4.32E-03	2.62E-03	3.07E-03	2.21E-03	2.08E-03	3.14E-02

RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:52 Page: 1- 4 : 26 **
title : Youngs
put File : C:\RESBLD\JYBASE1D.IEvaluation Time: 0.000000 years

urce: 4

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
I-238											
U-238	4.42E-01	1.51E-02	5.28E-02	4.42E-01	1.51E-02	8.75E-02	1.36E-02	2.35E-02	2.98E-02	1.02E-02	1.13E+00
I-235											
U-235	1.18E-01	3.56E-03	1.35E-02	1.18E-01	3.56E-03	2.31E-02	3.26E-03	5.94E-03	7.78E-03	2.41E-03	2.99E-01
I-234											
U-234	3.47E-03	1.36E-03	1.55E-03	3.47E-03	1.36E-03	1.30E-03	9.11E-04	9.63E-04	1.01E-03	8.97E-04	1.63E-02

urce: 5

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
I-238											
U-238	6.68E-02	9.32E-02	2.80E-01	1.25E-01	2.98E-01	2.98E-01	2.98E-01	2.76E-01	8.91E-02	8.91E-02	1.91E+00
I-235											
U-235	1.72E-02	2.41E-02	7.40E-02	3.28E-02	7.87E-02	7.88E-02	7.88E-02	7.28E-02	2.29E-02	2.29E-02	5.03E-01
I-234											
U-234	2.01E-03	2.13E-03	3.07E-03	2.27E-03	3.08E-03	3.71E-03	3.71E-03	3.68E-03	2.74E-03	2.74E-03	2.92E-02

urce: 6

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
I-238											
U-238	1.24E-02	4.11E-02	3.40E-02	1.63E-02	1.60E-01	2.67E-02	4.71E-01	8.69E-02	2.68E-02	4.78E-01	1.35E+00
I-235											
U-235	2.92E-03	1.08E-02	8.67E-03	3.89E-03	4.25E-02	6.54E-03	1.25E-01	2.26E-02	6.55E-03	1.27E-01	3.57E-01
I-234											
U-234	1.10E-03	1.24E-03	1.20E-03	1.11E-03	1.82E-03	1.55E-03	3.71E-03	1.85E-03	1.55E-03	3.75E-03	1.89E-02

urce: 7

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
I-238											
U-238	2.25E-02	2.52E-02	4.14E-02	4.43E-02	5.52E-02	8.91E-02	8.91E-02	2.80E-01	2.99E-01	2.99E-01	1.24E+00
I-235											
U-235	5.32E-03	6.00E-03	1.02E-02	1.11E-02	1.39E-02	2.29E-02	2.29E-02	7.39E-02	7.89E-02	7.89E-02	3.24E-01
I-234											
U-234	1.78E-03	1.79E-03	1.87E-03	1.89E-03	1.94E-03	2.74E-03	2.74E-03	3.70E-03	3.71E-03	3.71E-03	2.59E-02

RAD-**LD** ram-puters-2.1/11/12: Page - 4 27
title : Youngs
Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 0.000000 years

ource: 8

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	4.11E-02	1.63E-02	4.91E-02	1.59E-01	2.35E-02	4.71E-01	2.67E-02	8.69E-02	4.78E-01	2.68E-02	1.38E+00
U-235											
U-235	1.08E-02	3.97E-03	1.28E-02	4.24E-02	5.80E-03	1.25E-01	6.54E-03	2.26E-02	1.27E-01	6.55E-03	3.64E-01
U-234											
U-234	1.24E-03	1.12E-03	1.29E-03	1.82E-03	1.15E-03	3.71E-03	1.55E-03	1.85E-03	3.75E-03	1.55E-03	1.90E-02

ource: 9

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	2.95E-01	2.95E-01	5.81E-01	2.95E-01	2.95E-01	3.27E-01	2.22E-01	2.36E-01	1.23E-01	1.02E-01	2.77E+00
U-235											
U-235	7.68E-02	7.68E-02	1.52E-01	7.68E-02	7.68E-02	8.56E-02	5.80E-02	6.15E-02	3.17E-02	2.62E-02	7.23E-01
U-234											
U-234	6.78E-03	6.78E-03	8.13E-03	6.78E-03	6.78E-03	5.09E-03	4.60E-03	4.67E-03	4.14E-03	4.04E-03	5.78E-02

ource: 10

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	7.59E-02	9.30E-02	1.80E-01	1.38E-01	2.02E-01	2.70E-01	2.70E-01	4.38E-01	2.70E-01	2.70E-01	2.21E+00
U-235											
U-235	1.94E-02	2.40E-02	4.69E-02	3.59E-02	5.27E-02	7.04E-02	7.04E-02	1.15E-01	7.06E-02	7.06E-02	5.76E-01
U-234											
U-234	3.45E-03	3.53E-03	3.94E-03	3.75E-03	4.05E-03	5.52E-03	5.52E-03	6.32E-03	5.52E-03	5.52E-03	4.71E-02

* RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:54 Page: 2- 1 : . 28 **
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 1.00000 years

Assessment for Time: 2
Time = 1.00E+00 yr

Source Information

Source: 1
Location:: Room : 1 x: 18.20 y: 0.00 z: 4.40 [m]
Geometry:: Type: Area Area: 3.22E+02 [m²] Direction: y
Pathway ::
Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-02
Removable fraction: 1.000E-03
Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
[pCi/m²]
U-238 2.150E+06
U-235 9.999E+04
U-234 2.260E+06
PA-231 2.114E+00
TH-230 2.035E+01
AC-227 3.343E-02
RA-226 4.411E-03
PB-210 4.537E-05

Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 1.00000 years

Source: 2

Location:: Room : 1 x: 0.00 y: 9.15 z: 4.40 [m]
Geometry:: Type: Area Area:1.61E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pcCi/m2]
 U-238 2.150E+06
 U-235 9.999E+04
 U-234 2.260E+06
 PA-231 2.114E+00
 TH-230 2.035E+01
 AC-227 3.343E-02
 RA-226 4.411E-03
 PB-210 4.537E-05

Source: 3

Location:: Room : 1 x: 18.30 y: 18.30 z: 4.40 [m]
Geometry:: Type: Area Area:3.22E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pcCi/m2]
 U-238 2.150E+06
 U-235 9.999E+04
 U-234 2.260E+06
 PA-231 2.114E+00
 TH-230 2.035E+01
 AC-227 3.343E-02
 RA-226 4.411E-03
 PB-210 4.537E-05

tale : Youngs

put File : C:\RESBLD\JYBASE1D.IEvaluation Time: 1.00000 years

ource: 4

Location:: Room : 1 x: 36.60 y: 9.15 z: 4.40 [m]
Geometry:: Type: Area Area:1.61E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.150E+06
	U-235	9.999E+04
	U-234	2.260E+06
	PA-231	2.114E+00
	TH-230	2.035E+01
	AC-227	3.343E-02
	RA-226	4.411E-03
	PB-210	4.537E-05

ource: 5

Location:: Room : 2 x: 15.25 y: 18.30 z: 5.20 [m]
Geometry:: Type: Area Area:3.15E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.150E+06
	U-235	9.999E+04
	U-234	2.260E+06
	PA-231	2.114E+00
	TH-230	2.035E+01
	AC-227	3.343E-02
	RA-226	4.411E-03
	PB-210	4.537E-05

Title : Youngs

put File : C:\RESBLD\JYBASE1D.I Evaluation Time: 1.00000 years

Source: 6

Location:: Room : 2 x: 0.00 y: 27.80 z: 5.18 [m]
Geometry:: Type: Area Area:1.95E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.150E+06
 U-235 9.999E+04
 U-234 2.260E+06
 PA-231 2.114E+00
 TH-230 2.035E+01
 AC-227 3.343E-02
 RA-226 4.411E-03
 PB-210 4.537E-05

Source: 7

Location:: Room : 2 x: 15.25 y: 37.20 z: 5.18 [m]
Geometry:: Type: Area Area:3.15E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.150E+06
 U-235 9.999E+04
 U-234 2.260E+06
 PA-231 2.114E+00
 TH-230 2.035E+01
 AC-227 3.343E-02
 RA-226 4.411E-03
 PB-210 4.537E-05

* RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:54 Page: 2- 1 : 32 **
title : Youngs
Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 1.00000 years

```
Source: 8
Location:: Room : 2 x: 30.50 y: 27.80 z: 5.18 [m]
Geometry:: Type: Area Area:1.95E+02 [m2] Direction: x
Pathway :: Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-02
Removable fraction: 1.000E-03
Time to Remove: 7.300E+03 [day]
```

Contamination::	Nuclide	Concentration [pCi/m ²]
	U-238	2.150E+06
	U-235	9.999E+04
	U-234	2.260E+06
	PA-231	2.114E+00
	TH-230	2.035E+01
	AC-227	3.343E-02
	RA-226	4.411E-03
	PB-210	4.537E-05

```
source: 9
Location:: Room : 1 x: 18.30 y: 9.15 z: 8.80 [m]
Geometry:: Type: Area Area:6.70E+02 [m2] Direction: z
Pathway :: 
    Direct Ingestion Rate: 0.000E+00 [1/hr]
    Fraction released to air: 1.000E-02
    Removable fraction: 1.000E-03
    Time to Remove: 7.300E+03 [day]
```

Contamination::	Nuclide	Concentration [pCi/m ²]
	U-238	2.150E+06
	U-235	9.999E+04
	U-234	2.260E+06
	PA-231	2.114E+00
	TH-230	2.035E+01
	AC-227	3.343E-02
	RA-226	4.411E-03
	PB-210	4.537E-05

* RESRAD-BUILD Program Output, Version 2.10 08/11/97 12:54 Page: 2- 1 33
title : Youngs
input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 1.00000 years

Source: 10

Location:: Room : 2 x: 15.25 y: 27.80 z: 10.36 [m]
Geometry:: Type: Area Area: 5.76E+02 [m²] Direction: z
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m ²]
	U-238	2.150E+06
	U-235	9.999E+04
	U-234	2.260E+06
	PA-231	2.114E+00
	TH-230	2.035E+01
	AC-227	3.343E-02
	RA-226	4.411E-03
	PB-210	4.537E-05

RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:54 Page: 2- 2 : 34 **
Title : Youngs
Input File : C:\RESBLD\JYBASE1.D.I Evaluation Time: 1.00000 years

RESRAD-BUILD Dose Tables

Receptor Point-Source Doses

[mrem]

	Source 1	Source 2	Source 3	Source 4	Source 5	Source 6	Source 7	Source 8	Source 9	Source 10	Total
Receptor 1	2.5E-01	2.0E-02	1.1E-01	5.6E-01	8.6E-02	1.6E-02	3.0E-02	5.3E-02	3.8E-01	9.9E-02	1.6E+00
Receptor 2	2.5E-01	5.6E-01	1.1E-01	2.0E-02	1.2E-01	5.3E-02	3.3E-02	2.1E-02	3.8E-01	1.2E-01	1.7E+00
Receptor 3	3.9E-01	6.8E-02	3.9E-01	6.8E-02	3.6E-01	4.4E-02	5.4E-02	6.3E-02	7.4E-01	2.3E-01	2.4E+00
Receptor 4	1.1E-01	2.0E-02	2.5E-01	5.6E-01	1.6E-01	2.1E-02	5.7E-02	2.0E-01	3.8E-01	1.8E-01	1.9E+00
Receptor 5	1.1E-01	5.6E-01	2.5E-01	2.0E-02	3.8E-01	2.0E-01	7.1E-02	3.0E-02	3.8E-01	2.6E-01	2.3E+00
Receptor 6	8.3E-02	2.6E-02	7.1E-01	1.1E-01	3.8E-01	3.5E-02	1.1E-01	6.0E-01	4.2E-01	3.5E-01	2.8E+00
Receptor 7	6.9E-02	1.8E-01	2.5E-01	1.8E-02	3.8E-01	6.0E-01	1.1E-01	3.5E-02	2.8E-01	3.5E-01	2.3E+00
Receptor 8	5.6E-02	4.4E-02	3.5E-01	3.0E-02	3.5E-01	1.1E-01	3.6E-01	1.1E-01	3.0E-01	5.6E-01	2.3E+00
Receptor 9	3.5E-02	1.8E-02	1.3E-01	3.9E-02	1.1E-01	3.5E-02	3.8E-01	6.1E-01	1.6E-01	3.5E-01	1.9E+00
Receptor 10	3.2E-02	4.3E-02	1.0E-01	1.4E-02	1.1E-01	6.1E-01	3.8E-01	3.5E-02	1.3E-01	3.5E-01	1.8E+00
Total	1.4E+00	1.5E+00	2.6E+00	1.4E+00	2.4E+00	1.7E+00	1.6E+00	1.8E+00	3.5E+00	2.8E+00	2.1E+01

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	2.41E-01	1.67E-07	5.86E-10	4.97E-03	2.78E-09	2.71E-05
2	2.48E-01	1.67E-07	5.86E-10	4.97E-03	2.78E-09	2.71E-05
3	3.81E-01	1.67E-07	5.86E-10	4.97E-03	2.78E-09	2.71E-05
4	1.01E-01	1.67E-07	5.86E-10	4.97E-03	2.78E-09	2.71E-05
5	1.02E-01	1.67E-07	5.86E-10	4.97E-03	2.78E-09	2.71E-05
6	7.99E-02	1.07E-07	3.87E-10	3.28E-03	2.19E-09	1.78E-05
7	6.56E-02	1.07E-07	3.87E-10	3.28E-03	2.19E-09	1.78E-05
8	5.26E-02	1.07E-07	3.87E-10	3.28E-03	2.19E-09	1.78E-05
9	3.19E-02	1.07E-07	3.87E-10	3.28E-03	2.19E-09	1.78E-05
10	2.89E-02	1.07E-07	3.87E-10	3.28E-03	2.19E-09	1.78E-05
Total	1.33E+00	1.37E-06	4.87E-09	4.13E-02	2.49E-08	2.24E-04

Source: 2

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.76E-02	8.34E-08	2.93E-10	2.49E-03	1.39E-09	1.35E-05
2	5.61E-01	8.34E-08	2.93E-10	2.49E-03	1.39E-09	1.35E-05
3	6.54E-02	8.34E-08	2.93E-10	2.49E-03	1.39E-09	1.35E-05
4	1.76E-02	8.34E-08	2.93E-10	2.49E-03	1.39E-09	1.35E-05
5	5.61E-01	8.34E-08	2.93E-10	2.49E-03	1.39E-09	1.35E-05
6	2.39E-02	5.36E-08	1.93E-10	1.64E-03	1.10E-09	8.92E-06
7	1.79E-01	5.36E-08	1.93E-10	1.64E-03	1.10E-09	8.92E-06
8	4.23E-02	5.36E-08	1.93E-10	1.64E-03	1.10E-09	8.92E-06
9	1.60E-02	5.36E-08	1.93E-10	1.64E-03	1.10E-09	8.92E-06
10	4.17E-02	5.36E-08	1.93E-10	1.64E-03	1.10E-09	8.92E-06
Total	1.52E+00	6.85E-07	2.43E-09	2.06E-02	1.24E-08	1.12E-04

Source: 3

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.02E-01	1.67E-07	5.86E-10	4.97E-03	2.78E-09	2.71E-05
2	1.02E-01	1.67E-07	5.86E-10	4.97E-03	2.78E-09	2.71E-05
3	3.81E-01	1.67E-07	5.86E-10	4.97E-03	2.78E-09	2.71E-05
4	2.45E-01	1.67E-07	5.86E-10	4.97E-03	2.78E-09	2.71E-05
5	2.45E-01	1.67E-07	5.86E-10	4.97E-03	2.78E-09	2.71E-05
6	7.06E-01	1.07E-07	3.87E-10	3.28E-03	2.19E-09	1.78E-05
7	2.45E-01	1.07E-07	3.87E-10	3.28E-03	2.19E-09	1.78E-05
8	3.49E-01	1.07E-07	3.87E-10	3.28E-03	2.19E-09	1.78E-05
9	1.30E-01	1.07E-07	3.87E-10	3.28E-03	2.19E-09	1.78E-05
10	9.73E-02	1.07E-07	3.87E-10	3.28E-03	2.19E-09	1.78E-05
Total	2.60E+00	1.37E-06	4.87E-09	4.13E-02	2.49E-08	2.24E-04

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 1.00000 years

Source: 4

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	5.61E-01	8.34E-08	2.93E-10	2.49E-03	1.39E-09	1.35E-05
2	1.76E-02	8.34E-08	2.93E-10	2.49E-03	1.39E-09	1.35E-05
3	6.54E-02	8.34E-08	2.93E-10	2.49E-03	1.39E-09	1.35E-05
4	5.61E-01	8.34E-08	2.93E-10	2.49E-03	1.39E-09	1.35E-05
5	1.76E-02	8.34E-08	2.93E-10	2.49E-03	1.39E-09	1.35E-05
6	1.10E-01	5.36E-08	1.93E-10	1.64E-03	1.10E-09	8.92E-06
7	1.61E-02	5.36E-08	1.93E-10	1.64E-03	1.10E-09	8.92E-06
8	2.88E-02	5.36E-08	1.93E-10	1.64E-03	1.10E-09	8.92E-06
9	3.70E-02	5.36E-08	1.93E-10	1.64E-03	1.10E-09	8.92E-06
10	1.19E-02	5.36E-08	1.93E-10	1.64E-03	1.10E-09	8.92E-06
Total	1.43E+00	6.85E-07	2.43E-09	2.06E-02	1.24E-08	1.12E-04

Source: 5

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	8.28E-02	1.09E-07	3.82E-10	3.24E-03	2.05E-09	1.76E-05
2	1.16E-01	1.09E-07	3.82E-10	3.24E-03	2.05E-09	1.76E-05
3	3.54E-01	1.09E-07	3.82E-10	3.24E-03	2.05E-09	1.76E-05
4	1.57E-01	1.09E-07	3.82E-10	3.24E-03	2.05E-09	1.76E-05
5	3.76E-01	1.09E-07	3.82E-10	3.24E-03	2.05E-09	1.76E-05
6	3.76E-01	1.45E-07	5.24E-10	4.44E-03	2.61E-09	2.42E-05
7	3.76E-01	1.45E-07	5.24E-10	4.44E-03	2.61E-09	2.42E-05
8	3.48E-01	1.45E-07	5.24E-10	4.44E-03	2.61E-09	2.42E-05
9	1.10E-01	1.45E-07	5.24E-10	4.44E-03	2.61E-09	2.42E-05
10	1.10E-01	1.45E-07	5.24E-10	4.44E-03	2.61E-09	2.42E-05
Total	2.41E+00	1.27E-06	4.53E-09	3.84E-02	2.33E-08	2.09E-04

Source: 6

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.44E-02	6.72E-08	2.36E-10	2.00E-03	1.27E-09	1.09E-05
2	5.10E-02	6.72E-08	2.36E-10	2.00E-03	1.27E-09	1.09E-05
3	4.18E-02	6.72E-08	2.36E-10	2.00E-03	1.27E-09	1.09E-05
4	1.93E-02	6.72E-08	2.36E-10	2.00E-03	1.27E-09	1.09E-05
5	2.02E-01	6.72E-08	2.36E-10	2.00E-03	1.27E-09	1.09E-05
6	3.20E-02	8.99E-08	3.24E-10	2.75E-03	1.62E-09	1.50E-05
7	5.97E-01	8.99E-08	3.24E-10	2.75E-03	1.62E-09	1.50E-05
8	1.09E-01	8.99E-08	3.24E-10	2.75E-03	1.62E-09	1.50E-05
9	3.21E-02	8.99E-08	3.24E-10	2.75E-03	1.62E-09	1.50E-05
10	6.07E-01	8.99E-08	3.24E-10	2.75E-03	1.62E-09	1.50E-05
Total	1.71E+00	7.85E-07	2.80E-09	2.38E-02	1.44E-08	1.29E-04

title : Youngs

put File : C:\RESBLD\JYBASE1D.I Evaluation Time: 1.00000 years

urce: 7

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	2.64E-02	1.09E-07	3.82E-10	3.24E-03	2.05E-09	1.76E-05
2	2.97E-02	1.09E-07	3.82E-10	3.24E-03	2.05E-09	1.76E-05
3	5.03E-02	1.09E-07	3.82E-10	3.24E-03	2.05E-09	1.76E-05
4	5.41E-02	1.09E-07	3.82E-10	3.24E-03	2.05E-09	1.76E-05
5	6.78E-02	1.09E-07	3.82E-10	3.24E-03	2.05E-09	1.76E-05
6	1.10E-01	1.45E-07	5.24E-10	4.44E-03	2.61E-09	2.42E-05
7	1.10E-01	1.45E-07	5.24E-10	4.44E-03	2.61E-09	2.42E-05
8	3.54E-01	1.45E-07	5.24E-10	4.44E-03	2.61E-09	2.42E-05
9	3.77E-01	1.45E-07	5.24E-10	4.44E-03	2.61E-09	2.42E-05
10	3.77E-01	1.45E-07	5.24E-10	4.44E-03	2.61E-09	2.42E-05
Total	1.56E+00	1.27E-06	4.53E-09	3.84E-02	2.33E-08	2.09E-04

urce: 8

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	5.11E-02	6.72E-08	2.36E-10	2.00E-03	1.27E-09	1.09E-05
2	1.94E-02	6.72E-08	2.36E-10	2.00E-03	1.27E-09	1.09E-05
3	6.12E-02	6.72E-08	2.36E-10	2.00E-03	1.27E-09	1.09E-05
4	2.02E-01	6.72E-08	2.36E-10	2.00E-03	1.27E-09	1.09E-05
5	2.84E-02	6.72E-08	2.36E-10	2.00E-03	1.27E-09	1.09E-05
6	5.97E-01	8.99E-08	3.24E-10	2.75E-03	1.62E-09	1.50E-05
7	3.20E-02	8.99E-08	3.24E-10	2.75E-03	1.62E-09	1.50E-05
8	1.09E-01	8.99E-08	3.24E-10	2.75E-03	1.62E-09	1.50E-05
9	6.07E-01	8.99E-08	3.24E-10	2.75E-03	1.62E-09	1.50E-05
10	3.21E-02	8.99E-08	3.24E-10	2.75E-03	1.62E-09	1.50E-05
Total	1.74E+00	7.85E-07	2.80E-09	2.38E-02	1.44E-08	1.29E-04

urce: 9

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	3.68E-01	3.47E-07	1.22E-09	1.03E-02	5.79E-09	5.63E-05
2	3.68E-01	3.47E-07	1.22E-09	1.03E-02	5.79E-09	5.63E-05
3	7.31E-01	3.47E-07	1.22E-09	1.03E-02	5.79E-09	5.63E-05
4	3.68E-01	3.47E-07	1.22E-09	1.03E-02	5.79E-09	5.63E-05
5	3.68E-01	3.47E-07	1.22E-09	1.03E-02	5.79E-09	5.63E-05
6	4.11E-01	2.23E-07	8.04E-10	6.82E-03	4.56E-09	3.71E-05
7	2.78E-01	2.23E-07	8.04E-10	6.82E-03	4.56E-09	3.71E-05
8	2.95E-01	2.23E-07	8.04E-10	6.82E-03	4.56E-09	3.71E-05
9	1.52E-01	2.23E-07	8.04E-10	6.82E-03	4.56E-09	3.71E-05
10	1.25E-01	2.23E-07	8.04E-10	6.82E-03	4.56E-09	3.71E-05
Total	3.46E+00	2.85E-06	1.01E-08	8.59E-02	5.17E-08	4.67E-04

* RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:54 Page: 2- 3 : 38 **
title : Youngs
input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 1.00000 years

source: 10

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	9.28E-02	1.98E-07	6.98E-10	5.92E-03	3.75E-09	3.22E-05
2	1.15E-01	1.98E-07	6.98E-10	5.92E-03	3.75E-09	3.22E-05
3	2.25E-01	1.98E-07	6.98E-10	5.92E-03	3.75E-09	3.22E-05
4	1.72E-01	1.98E-07	6.98E-10	5.92E-03	3.75E-09	3.22E-05
5	2.53E-01	1.98E-07	6.98E-10	5.92E-03	3.75E-09	3.22E-05
6	3.37E-01	2.66E-07	9.58E-10	8.12E-03	4.77E-09	4.42E-05
7	3.37E-01	2.66E-07	9.58E-10	8.12E-03	4.77E-09	4.42E-05
8	5.51E-01	2.66E-07	9.58E-10	8.12E-03	4.77E-09	4.42E-05
9	3.38E-01	2.66E-07	9.58E-10	8.12E-03	4.77E-09	4.42E-05
10	3.38E-01	2.66E-07	9.58E-10	8.12E-03	4.77E-09	4.42E-05
Total	2.76E+00	2.32E-06	8.28E-09	7.02E-02	4.26E-08	3.82E-04

Nuclide Detail of Doses

[mrem]

Source: 1

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
J-238											
U-238	1.92E-01	1.98E-01	3.02E-01	8.23E-02	8.32E-02	6.48E-02	5.34E-02	4.33E-02	2.69E-02	2.46E-02	1.07E+00
U-234	9.41E-09	9.48E-09	1.10E-08	8.04E-09	8.05E-09	5.39E-09	5.26E-09	5.10E-09	4.90E-09	4.88E-09	7.15E-08
TH-230	1.09E-13	1.10E-13	1.29E-13	9.09E-14	9.11E-14	6.14E-14	5.96E-14	5.77E-14	5.50E-14	5.47E-14	8.18E-13
RA-226	2.00E-14	2.05E-14	3.00E-14	9.71E-15	9.80E-15	7.78E-15	6.69E-15	5.81E-15	4.26E-15	4.03E-15	1.19E-13
PB-210	5.68E-20	5.85E-20	9.73E-20	2.73E-20	2.75E-20	2.02E-20	1.69E-20	1.32E-20	8.31E-21	7.71E-21	3.34E-19
J-235											
U-235	5.05E-02	5.20E-02	7.98E-02	2.11E-02	2.13E-02	1.64E-02	1.35E-02	1.07E-02	6.42E-03	5.83E-03	2.78E-01
PA-231	2.66E-07	2.74E-07	4.07E-07	1.26E-07	1.27E-07	9.62E-08	8.18E-08	6.87E-08	4.80E-08	4.50E-08	1.54E-06
AC-227	4.25E-08	4.37E-08	6.57E-08	1.89E-08	1.91E-08	1.46E-08	1.22E-08	1.01E-08	6.59E-09	6.09E-09	2.39E-07
I-234											
U-234	3.49E-03	3.52E-03	4.09E-03	2.99E-03	2.99E-03	2.00E-03	1.95E-03	1.90E-03	1.82E-03	1.81E-03	2.66E-02
TH-230	8.10E-08	8.17E-08	9.55E-08	6.75E-08	6.77E-08	4.56E-08	4.42E-08	4.29E-08	4.09E-08	4.06E-08	6.08E-07
RA-226	2.52E-08	2.58E-08	3.78E-08	1.22E-08	1.23E-08	9.80E-09	8.43E-09	7.32E-09	5.37E-09	5.07E-09	1.49E-07
PB-210	3.07E-13	3.16E-13	5.26E-13	1.47E-13	1.49E-13	1.09E-13	9.14E-14	7.14E-14	4.49E-14	4.16E-14	1.80E-12

Source: 2

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
J-238											
U-238	1.51E-02	4.42E-01	5.28E-02	1.51E-02	4.42E-01	1.98E-02	1.42E-01	3.41E-02	1.34E-02	3.35E-02	1.21E+00
U-234	3.66E-09	9.33E-09	4.16E-09	3.66E-09	9.33E-09	2.53E-09	4.18E-09	2.75E-09	2.46E-09	2.75E-09	4.48E-08
TH-230	4.10E-14	1.14E-13	4.73E-14	4.10E-14	1.14E-13	2.86E-14	4.96E-14	3.12E-14	2.76E-14	3.12E-14	5.25E-13
RA-226	2.49E-15	4.17E-14	5.98E-15	2.49E-15	4.17E-14	2.71E-15	1.39E-14	3.99E-15	2.10E-15	3.89E-15	1.21E-13
PB-210	5.02E-21	1.36E-19	1.70E-20	5.02E-21	1.36E-19	6.16E-21	4.41E-20	1.13E-20	4.42E-21	1.10E-20	3.77E-19
I-235											
U-235	3.56E-03	1.18E-01	1.35E-02	3.56E-03	1.18E-01	4.88E-03	3.77E-02	8.81E-03	3.27E-03	8.80E-03	3.20E-01
PA-231	2.98E-08	5.74E-07	7.78E-08	2.98E-08	5.74E-07	3.20E-08	1.88E-07	5.05E-08	2.41E-08	5.00E-08	1.63E-06
AC-227	3.90E-09	9.50E-08	1.19E-08	3.90E-09	9.50E-08	4.63E-09	3.07E-08	7.71E-09	3.30E-09	7.64E-09	2.64E-07
I-234											
U-234	1.36E-03	3.47E-03	1.55E-03	1.36E-03	3.47E-03	9.40E-04	1.55E-03	1.02E-03	9.13E-04	1.02E-03	1.66E-02
TH-230	3.04E-08	8.45E-08	3.52E-08	3.04E-08	8.45E-08	2.12E-08	3.68E-08	2.32E-08	2.05E-08	2.32E-08	3.90E-07
RA-226	3.14E-09	5.25E-08	7.53E-09	3.14E-09	5.25E-08	3.42E-09	1.74E-08	5.02E-09	2.64E-09	4.90E-09	1.52E-07
PB-210	2.71E-14	7.37E-13	9.21E-14	2.71E-14	7.37E-13	3.33E-14	2.38E-13	6.11E-14	2.39E-14	5.93E-14	2.04E-12

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 1.00000 years

Source: 3

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
J-238											
U-238	8.27E-02	8.27E-02	3.02E-01	1.95E-01	1.95E-01	5.57E-01	1.94E-01	2.77E-01	1.05E-01	7.83E-02	2.07E+00
U-234	8.05E-09	8.05E-09	1.10E-08	9.44E-09	9.44E-09	1.16E-08	7.05E-09	8.28E-09	5.94E-09	5.61E-09	8.45E-08
TH-230	9.10E-14	9.10E-14	1.29E-13	1.10E-13	1.10E-13	1.43E-13	8.31E-14	9.78E-14	6.82E-14	6.39E-14	9.86E-13
RA-226	9.75E-15	9.75E-15	3.00E-14	2.02E-14	2.02E-14	5.37E-14	1.98E-14	2.72E-14	1.14E-14	8.96E-15	2.11E-13
PB-210	2.74E-20	2.74E-20	9.73E-20	5.76E-20	5.76E-20	1.60E-19	5.67E-20	8.84E-20	3.32E-20	2.52E-20	6.31E-19
I-235											
U-235	2.12E-02	2.12E-02	7.98E-02	5.13E-02	5.13E-02	1.48E-01	5.12E-02	7.30E-02	2.71E-02	2.02E-02	5.44E-01
PA-231	1.27E-07	1.27E-07	4.07E-07	2.70E-07	2.70E-07	7.23E-07	2.62E-07	3.66E-07	1.47E-07	1.14E-07	2.81E-06
AC-227	1.90E-08	1.90E-08	6.57E-08	4.31E-08	4.31E-08	1.20E-07	4.24E-08	5.97E-08	2.31E-08	1.75E-08	4.52E-07
J-234											
U-234	2.99E-03	2.99E-03	4.09E-03	3.51E-03	3.51E-03	4.31E-03	2.62E-03	3.07E-03	2.21E-03	2.08E-03	3.14E-02
TH-230	6.76E-08	6.76E-08	9.55E-08	8.14E-08	8.14E-08	1.06E-07	6.17E-08	7.26E-08	5.07E-08	4.75E-08	7.32E-07
RA-226	1.23E-08	1.23E-08	3.78E-08	2.55E-08	2.55E-08	6.76E-08	2.49E-08	3.43E-08	1.44E-08	1.13E-08	2.66E-07
PB-210	1.48E-13	1.48E-13	5.26E-13	3.11E-13	3.11E-13	8.64E-13	3.06E-13	4.77E-13	1.79E-13	1.36E-13	3.41E-12

Source: 4

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
I-238											
U-238	4.42E-01	1.51E-02	5.28E-02	4.42E-01	1.51E-02	8.75E-02	1.36E-02	2.35E-02	2.98E-02	1.02E-02	1.13E+00
U-234	9.33E-09	3.66E-09	4.16E-09	9.33E-09	3.66E-09	3.51E-09	2.45E-09	2.59E-09	2.71E-09	2.42E-09	4.38E-08
TH-230	1.14E-13	4.10E-14	4.73E-14	1.14E-13	4.10E-14	4.05E-14	2.75E-14	2.93E-14	3.06E-14	2.70E-14	5.12E-13
RA-226	4.17E-14	2.49E-15	5.98E-15	4.17E-14	2.49E-15	8.84E-15	2.14E-15	3.04E-15	3.54E-15	1.81E-15	1.14E-13
PB-210	1.36E-19	5.02E-21	1.70E-20	1.36E-19	5.02E-21	2.91E-20	4.24E-21	7.62E-21	1.04E-20	3.37E-21	3.55E-19
I-235											
U-235	1.18E-01	3.56E-03	1.35E-02	1.18E-01	3.56E-03	2.31E-02	3.26E-03	5.94E-03	7.78E-03	2.41E-03	2.99E-01
PA-231	5.74E-07	2.98E-08	7.78E-08	5.74E-07	2.98E-08	1.19E-07	2.42E-08	3.69E-08	4.53E-08	2.00E-08	1.53E-06
AC-227	9.50E-08	3.90E-09	1.19E-08	9.50E-08	3.90E-09	1.91E-08	3.33E-09	5.45E-09	6.83E-09	2.62E-09	2.47E-07
I-234											
U-234	3.47E-03	1.36E-03	1.55E-03	3.47E-03	1.36E-03	1.30E-03	9.11E-04	9.63E-04	1.01E-03	8.97E-04	1.63E-02
TH-230	8.45E-08	3.04E-08	3.52E-08	8.45E-08	3.04E-08	3.01E-08	2.05E-08	2.18E-08	2.27E-08	2.01E-08	3.80E-07
RA-226	5.25E-08	3.14E-09	7.53E-09	5.25E-08	3.14E-09	1.11E-08	2.70E-09	3.83E-09	4.46E-09	2.28E-09	1.43E-07
PB-210	7.37E-13	2.71E-14	9.21E-14	7.37E-13	2.71E-14	1.57E-13	2.29E-14	4.11E-14	5.61E-14	1.82E-14	1.92E-12

RESRAD-BLND Program Output, Version 2.10 06/11/97 12:54 Page: 2 41
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 1.00000 years

Source: 5

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
J-238											
U-238	6.68E-02	9.32E-02	2.80E-01	1.25E-01	2.98E-01	2.98E-01	2.98E-01	2.76E-01	8.91E-02	8.91E-02	1.91E+00
U-234	5.41E-09	5.74E-09	8.28E-09	6.12E-09	8.30E-09	1.00E-08	1.00E-08	9.91E-09	7.38E-09	7.38E-09	7.85E-08
TH-230	6.14E-14	6.58E-14	9.78E-14	7.10E-14	9.96E-14	1.18E-13	1.18E-13	1.16E-13	8.37E-14	8.37E-14	9.16E-13
RA-226	7.76E-15	1.02E-14	2.74E-14	1.31E-14	2.93E-14	2.98E-14	2.98E-14	2.74E-14	1.02E-14	1.02E-14	1.95E-13
PB-210	2.18E-20	2.99E-20	8.96E-20	3.70E-20	8.63E-20	8.70E-20	8.70E-20	8.88E-20	2.90E-20	2.90E-20	5.85E-19
J-235											
U-235	1.72E-02	2.41E-02	7.40E-02	3.28E-02	7.87E-02	7.88E-02	7.88E-02	7.28E-02	2.29E-02	2.29E-02	5.03E-01
PA-231	9.90E-08	1.32E-07	3.71E-07	1.73E-07	3.93E-07	3.99E-07	3.99E-07	3.71E-07	1.32E-07	1.32E-07	2.60E-06
AC-227	1.51E-08	2.07E-08	6.05E-08	2.75E-08	6.44E-08	6.49E-08	6.49E-08	6.00E-08	2.02E-08	2.02E-08	4.18E-07
J-234											
U-234	2.01E-03	2.13E-03	3.07E-03	2.27E-03	3.08E-03	3.71E-03	3.71E-03	3.68E-03	2.74E-03	2.74E-03	2.92E-02
TH-230	4.56E-08	4.88E-08	7.26E-08	5.27E-08	7.40E-08	8.80E-08	8.80E-08	8.60E-08	6.22E-08	6.22E-08	6.80E-07
RA-226	9.77E-09	1.29E-08	3.45E-08	1.66E-08	3.69E-08	3.75E-08	3.75E-08	3.46E-08	1.29E-08	1.29E-08	2.46E-07
PB-210	1.18E-13	1.61E-13	4.84E-13	2.00E-13	4.66E-13	4.70E-13	4.70E-13	4.80E-13	1.57E-13	1.57E-13	3.16E-12

Source: 6

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
I-238											
U-238	1.24E-02	4.10E-02	3.40E-02	1.63E-02	1.60E-01	2.67E-02	4.71E-01	8.69E-02	2.68E-02	4.78E-01	1.35E+00
U-234	2.95E-09	3.35E-09	3.24E-09	3.00E-09	4.90E-09	4.17E-09	1.00E-08	4.99E-09	4.17E-09	1.01E-08	5.09E-08
TH-230	3.30E-14	3.81E-14	3.67E-14	3.36E-14	5.82E-14	4.69E-14	1.22E-13	5.72E-14	4.69E-14	1.23E-13	5.96E-13
RA-226	2.15E-15	4.72E-15	4.13E-15	2.53E-15	1.57E-14	3.75E-15	4.47E-14	9.29E-15	3.76E-15	4.54E-14	1.36E-13
PB-210	4.09E-21	1.32E-20	1.11E-20	5.08E-21	4.90E-20	8.55E-21	1.43E-19	2.81E-20	8.56E-21	1.45E-19	4.16E-19
I-235											
U-235	2.92E-03	1.08E-02	8.67E-03	3.89E-03	4.25E-02	6.54E-03	1.25E-01	2.26E-02	6.55E-03	1.27E-01	3.57E-01
PA-231	2.43E-08	6.12E-08	5.18E-08	2.91E-08	2.13E-07	4.56E-08	6.12E-07	1.22E-07	4.57E-08	6.22E-07	1.83E-06
AC-227	3.19E-09	9.36E-09	7.77E-09	3.99E-09	3.47E-08	6.42E-09	1.01E-07	1.92E-08	6.43E-09	1.03E-07	2.95E-07
I-234											
U-234	1.10E-03	1.24E-03	1.20E-03	1.11E-03	1.82E-03	1.55E-03	3.71E-03	1.85E-03	1.55E-03	3.75E-03	1.89E-02
TH-230	2.45E-08	2.83E-08	2.73E-08	2.50E-08	4.32E-08	3.48E-08	9.08E-08	4.25E-08	3.48E-08	9.17E-08	4.43E-07
RA-226	2.70E-09	5.94E-09	5.20E-09	3.18E-09	1.98E-08	4.73E-09	5.63E-08	1.17E-08	4.73E-09	5.72E-08	1.71E-07
PB-210	2.21E-14	7.14E-14	6.00E-14	2.74E-14	2.65E-13	4.62E-14	7.72E-13	1.52E-13	4.62E-14	7.84E-13	2.25E-12

title : Youngs

Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 1.00000 years

Source: 7

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
J-238											
U-238	2.25E-02	2.52E-02	4.14E-02	4.43E-02	5.51E-02	8.91E-02	8.91E-02	2.80E-01	2.99E-01	2.99E-01	1.24E+00
U-234	4.80E-09	4.82E-09	5.02E-09	5.08E-09	5.22E-09	7.38E-09	7.38E-09	9.97E-09	1.00E-08	1.00E-08	6.97E-08
TH-230	5.37E-14	5.41E-14	5.68E-14	5.74E-14	5.92E-14	8.38E-14	8.38E-14	1.17E-13	1.18E-13	1.18E-13	8.02E-13
RA-226	3.72E-15	3.98E-15	5.52E-15	5.72E-15	6.76E-15	1.03E-14	1.03E-14	2.78E-14	2.98E-14	2.98E-14	1.34E-13
PB-210	7.17E-21	7.85E-21	1.27E-20	1.42E-20	1.73E-20	2.90E-20	2.90E-20	9.02E-20	8.71E-20	8.71E-20	3.82E-19
I-235											
U-235	5.32E-03	6.00E-03	1.02E-02	1.11E-02	1.39E-02	2.29E-02	2.29E-02	7.39E-02	7.89E-02	7.89E-02	3.24E-01
PA-231	4.23E-08	4.57E-08	6.62E-08	7.01E-08	8.38E-08	1.32E-07	1.32E-07	3.76E-07	4.00E-07	4.00E-07	1.75E-06
AC-227	5.65E-09	6.22E-09	9.64E-09	1.03E-08	1.26E-08	2.02E-08	2.02E-08	6.09E-08	6.50E-08	6.50E-08	2.76E-07
I-234											
U-234	1.78E-03	1.79E-03	1.87E-03	1.89E-03	1.94E-03	2.74E-03	2.74E-03	3.70E-03	3.71E-03	3.71E-03	2.59E-02
TH-230	3.99E-08	4.02E-08	4.22E-08	4.27E-08	4.39E-08	6.22E-08	6.22E-08	8.65E-08	8.80E-08	8.80E-08	5.96E-07
RA-226	4.68E-09	5.02E-09	6.95E-09	7.21E-09	8.51E-09	1.29E-08	1.29E-08	3.51E-08	3.75E-08	3.75E-08	1.68E-07
PB-210	3.87E-14	4.24E-14	6.84E-14	7.67E-14	9.35E-14	1.57E-13	1.57E-13	4.87E-13	4.70E-13	4.70E-13	2.06E-12

Source: 8

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
I-238											
U-238	4.11E-02	1.63E-02	4.91E-02	1.59E-01	2.35E-02	4.71E-01	2.67E-02	8.69E-02	4.78E-01	2.68E-02	1.38E+00
U-234	3.35E-09	3.01E-09	3.47E-09	4.90E-09	3.09E-09	1.00E-08	4.17E-09	4.99E-09	1.01E-08	4.17E-09	5.13E-08
TH-230	3.81E-14	3.37E-14	3.95E-14	5.81E-14	3.48E-14	1.22E-13	4.69E-14	5.72E-14	1.23E-13	4.69E-14	6.01E-13
RA-226	4.72E-15	2.50E-15	5.48E-15	1.57E-14	3.20E-15	4.47E-14	3.75E-15	9.29E-15	4.54E-14	3.76E-15	1.38E-13
PB-210	1.33E-20	5.37E-21	1.64E-20	4.91E-20	7.33E-21	1.43E-19	8.55E-21	2.81E-20	1.45E-19	8.56E-21	4.25E-19
I-235											
U-235	1.08E-02	3.97E-03	1.28E-02	4.24E-02	5.80E-03	1.25E-01	6.54E-03	2.26E-02	1.27E-01	6.55E-03	3.64E-01
PA-231	6.12E-08	2.93E-08	7.13E-08	2.12E-07	3.83E-08	6.12E-07	4.56E-08	1.22E-07	6.22E-07	4.57E-08	1.86E-06
AC-227	9.36E-09	4.02E-09	1.10E-08	3.46E-08	5.52E-09	1.01E-07	6.42E-09	1.92E-08	1.03E-07	6.43E-09	3.01E-07
I-234											
U-234	1.24E-03	1.12E-03	1.29E-03	1.82E-03	1.15E-03	3.71E-03	1.55E-03	1.85E-03	3.75E-03	1.55E-03	1.90E-02
TH-230	2.83E-08	2.50E-08	2.93E-08	4.32E-08	2.59E-08	9.08E-08	3.48E-08	4.25E-08	9.17E-08	3.48E-08	4.46E-07
RA-226	5.94E-09	3.15E-09	6.90E-09	1.97E-08	4.03E-09	5.63E-08	4.73E-09	1.17E-08	5.72E-08	4.73E-09	1.74E-07
PB-210	7.18E-14	2.90E-14	8.88E-14	2.65E-13	3.96E-14	7.72E-13	4.62E-14	1.52E-13	7.84E-13	4.62E-14	2.29E-12

RESBLD Program Output, Version 2.10 06/11/97 12:54 Page: 2 4 43
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 1.00000 years

Source: 9

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
J-238											
U-238	2.95E-01	2.95E-01	5.81E-01	2.95E-01	2.95E-01	3.27E-01	2.22E-01	2.36E-01	1.23E-01	1.02E-01	2.77E+00
U-234	1.83E-08	1.83E-08	2.19E-08	1.83E-08	1.83E-08	1.37E-08	1.24E-08	1.26E-08	1.11E-08	1.09E-08	1.56E-07
TH-230	2.10E-13	2.10E-13	2.57E-13	2.10E-13	2.10E-13	1.60E-13	1.43E-13	1.45E-13	1.26E-13	1.23E-13	1.79E-12
RA-226	3.17E-14	3.17E-14	5.85E-14	3.17E-14	3.17E-14	3.39E-14	2.41E-14	2.54E-14	1.48E-14	1.28E-14	2.96E-13
PB-210	9.19E-20	9.19E-20	1.77E-19	9.19E-20	9.19E-20	9.98E-20	6.89E-20	7.28E-20	3.94E-20	3.31E-20	8.59E-19
J-235											
U-235	7.68E-02	7.68E-02	1.52E-01	7.68E-02	7.68E-02	8.56E-02	5.80E-02	6.15E-02	3.17E-02	2.62E-02	7.22E-01
PA-231	4.20E-07	4.20E-07	7.83E-07	4.20E-07	4.20E-07	4.45E-07	3.12E-07	3.29E-07	1.86E-07	1.59E-07	3.89E-06
AC-227	6.57E-08	6.57E-08	1.27E-07	6.57E-08	6.57E-08	7.14E-08	4.92E-08	5.21E-08	2.81E-08	2.36E-08	6.14E-07
J-234											
U-234	6.78E-03	6.78E-03	8.13E-03	6.78E-03	6.78E-03	5.09E-03	4.60E-03	4.67E-03	4.14E-03	4.04E-03	5.78E-02
TH-230	1.56E-07	1.56E-07	1.91E-07	1.56E-07	1.56E-07	1.19E-07	1.06E-07	1.08E-07	9.39E-08	9.13E-08	1.33E-06
RA-226	4.00E-08	4.00E-08	7.37E-08	4.00E-08	4.00E-08	4.27E-08	3.04E-08	3.19E-08	1.86E-08	1.62E-08	3.73E-07
PB-210	4.97E-13	4.97E-13	9.55E-13	4.97E-13	4.97E-13	5.39E-13	3.72E-13	3.93E-13	2.13E-13	1.79E-13	4.64E-12

Source: 10

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
J-238											
U-238	7.59E-02	9.30E-02	1.80E-01	1.38E-01	2.02E-01	2.70E-01	2.70E-01	4.38E-01	2.70E-01	2.70E-01	2.21E+00
U-234	9.29E-09	9.51E-09	1.06E-08	1.01E-08	1.09E-08	1.49E-08	1.49E-08	1.70E-08	1.49E-08	1.49E-08	1.27E-07
TH-230	1.05E-13	1.08E-13	1.22E-13	1.15E-13	1.26E-13	1.71E-13	1.71E-13	1.99E-13	1.71E-13	1.71E-13	1.46E-12
RA-226	9.81E-15	1.14E-14	1.95E-14	1.56E-14	2.16E-14	2.86E-14	2.86E-14	4.43E-14	2.87E-14	2.87E-14	2.37E-13
PB-210	2.55E-20	3.07E-20	5.70E-20	4.44E-20	6.36E-20	8.51E-20	8.51E-20	1.36E-19	8.54E-20	8.54E-20	6.98E-19
J-235											
U-235	1.94E-02	2.40E-02	4.69E-02	3.59E-02	5.27E-02	7.04E-02	7.04E-02	1.15E-01	7.06E-02	7.06E-02	5.76E-01
PA-231	1.22E-07	1.44E-07	2.55E-07	2.01E-07	2.82E-07	3.78E-07	3.78E-07	5.92E-07	3.79E-07	3.79E-07	3.11E-06
AC-227	1.79E-08	2.15E-08	4.00E-08	3.11E-08	4.46E-08	5.96E-08	5.96E-08	9.53E-08	5.98E-08	5.98E-08	4.89E-07
J-234											
U-234	3.45E-03	3.53E-03	3.94E-03	3.75E-03	4.05E-03	5.52E-03	5.52E-03	6.32E-03	5.52E-03	5.52E-03	4.71E-02
TH-230	7.77E-08	7.99E-08	9.06E-08	8.54E-08	9.33E-08	1.27E-07	1.27E-07	1.48E-07	1.27E-07	1.27E-07	1.08E-06
RA-226	1.24E-08	1.44E-08	2.46E-08	1.97E-08	2.72E-08	3.60E-08	3.60E-08	5.58E-08	3.61E-08	3.61E-08	2.98E-07
PB-210	1.38E-13	1.66E-13	3.08E-13	2.40E-13	3.44E-13	4.60E-13	4.60E-13	7.35E-13	4.61E-13	4.61E-13	3.77E-12

* RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:55 Page: 3- 1 : 44 **
title : Youngs
input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 2.00000 years

Assessment for Time: 3
Time = 2.00E+00 yr

Source Information

Source: 1
Location:: Room : 1 x: 18.20 y: 0.00 z: 4.40 [m]
Geometry:: Type: Area Area: 3.22E+02 [m²] Direction: y
Pathway ::
Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-02
Removable fraction: 1.000E-03
Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m ²]
	U-238	2.150E+06
	U-235	9.999E+04
	U-234	2.260E+06
	PA-231	4.228E+00
	TH-230	4.071E+01
	AC-227	1.323E-01
	RA-226	1.764E-02
	PB-210	3.601E-04

* RESBLD Program output, Version 2.10.09/11/97 12:55 Page: 3 1 45
title : Youngs
input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 2.00000 years

Source: 2

Location:: Room : 1 x: 0.00 y: 9.15 z: 4.40 [m]
Geometry:: Type: Area Area:1.61E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.150E+06
 U-235 9.999E+04
 U-234 2.260E+06
 PA-231 4.228E+00
 TH-230 4.071E+01
 AC-227 1.323E-01
 RA-226 1.764E-02
 PB-210 3.601E-04

Source: 3

Location:: Room : 1 x: 18.30 y: 18.30 z: 4.40 [m]
Geometry:: Type: Area Area:3.22E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.150E+06
 U-235 9.999E+04
 U-234 2.260E+06
 PA-231 4.228E+00
 TH-230 4.071E+01
 AC-227 1.323E-01
 RA-226 1.764E-02
 PB-210 3.601E-04

* RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:55 Page: 3- 1 : 46 **
title : Youngs
input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 2.00000 years

Source: 4

Location:: Room : 1 x: 36.60 y: 9.15 z: 4.40 [m]
Geometry:: Type: Area Area:1.61E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.150E+06
 U-235 9.999E+04
 U-234 2.260E+06
 PA-231 4.228E+00
 TH-230 4.071E+01
 AC-227 1.323E-01
 RA-226 1.764E-02
 PB-210 3.601E-04

Source: 5

Location:: Room : 2 x: 15.25 y: 18.30 z: 5.20 [m]
Geometry:: Type: Area Area:3.15E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.150E+06
 U-235 9.999E+04
 U-234 2.260E+06
 PA-231 4.228E+00
 TH-230 4.071E+01
 AC-227 1.323E-01
 RA-226 1.764E-02
 PB-210 3.601E-04

* [REDACTED] Program output, Version 2.10 09/11/95 12:55 Page: 5 11 47
title : Youngs
input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 2.00000 years

Source: 6

Location:: Room : 2 x: 0.00 y: 27.80 z: 5.18 [m]
Geometry:: Type: Area Area: 1.95E+02 [m²] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m²]
 U-238 2.150E+06
 U-235 9.999E+04
 U-234 2.260E+06
 PA-231 4.228E+00
 TH-230 4.071E+01
 AC-227 1.323E-01
 RA-226 1.764E-02
 PB-210 3.601E-04

Source: 7

Location:: Room : 2 x: 15.25 y: 37.20 z: 5.18 [m]
Geometry:: Type: Area Area: 3.15E+02 [m²] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m²]
 U-238 2.150E+06
 U-235 9.999E+04
 U-234 2.260E+06
 PA-231 4.228E+00
 TH-230 4.071E+01
 AC-227 1.323E-01
 RA-226 1.764E-02
 PB-210 3.601E-04

* RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:55 Page: 3- 1 : 48 **
title : Youngs
input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 2.00000 years

Source: 8

Location:: Room : 2 x: 30.50 y: 27.80 z: 5.18 [m]
Geometry:: Type: Area Area: 1.95E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.150E+06
 U-235 9.999E+04
 U-234 2.260E+06
 PA-231 4.228E+00
 TH-230 4.071E+01
 AC-227 1.323E-01
 RA-226 1.764E-02
 PB-210 3.601E-04

Source: 9

Location:: Room : 1 x: 18.30 y: 9.15 z: 8.80 [m]
Geometry:: Type: Area Area: 6.70E+02 [m2] Direction: z
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.150E+06
 U-235 9.999E+04
 U-234 2.260E+06
 PA-231 4.228E+00
 TH-230 4.071E+01
 AC-227 1.323E-01
 RA-226 1.764E-02
 PB-210 3.601E-04

Title : Youngs
Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 2.00000 years

Source: 10

Location:: Room : 2 x: 15.25 y: 27.80 z: 10.36 [m]
Geometry:: Type: Area Area: 5.76E+02 [m²] Direction: z

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-02
Removable fraction: 1.000E-03
Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pcCi/m ²]
	U-238	2.150E+06
	U-235	9.999E+04
	U-234	2.260E+06
	PA-231	4.228E+00
	TH-230	4.071E+01
	AC-227	1.323E-01
	RA-226	1.764E-02
	PB-210	3.601E-04

* RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:55 Page: 3- 2 : 50 **
title : Youngs
input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 2.00000 years

RESRAD-BUILD Dose Tables

Receptor Point-Source Doses

[mrem]

	Source 1	Source 2	Source 3	Source 4	Source 5	Source 6	Source 7	Source 8	Source 9	Source 10	Total
Receptor 1	2.5E-01	2.0E-02	1.1E-01	5.6E-01	8.6E-02	1.6E-02	3.0E-02	5.3E-02	3.8E-01	9.9E-02	1.6E+00
Receptor 2	2.5E-01	5.6E-01	1.1E-01	2.0E-02	1.2E-01	5.3E-02	3.3E-02	2.1E-02	3.8E-01	1.2E-01	1.7E+00
Receptor 3	3.9E-01	6.8E-02	3.9E-01	6.8E-02	3.6E-01	4.4E-02	5.4E-02	6.3E-02	7.4E-01	2.3E-01	2.4E+00
Receptor 4	1.1E-01	2.0E-02	2.5E-01	5.6E-01	1.6E-01	2.1E-02	5.7E-02	2.0E-01	3.8E-01	1.8E-01	1.9E+00
Receptor 5	1.1E-01	5.6E-01	2.5E-01	2.0E-02	3.8E-01	2.0E-01	7.1E-02	3.0E-02	3.8E-01	2.6E-01	2.3E+00
Receptor 6	8.3E-02	2.6E-02	7.1E-01	1.1E-01	3.8E-01	3.5E-02	1.1E-01	6.0E-01	4.2E-01	3.5E-01	2.8E+00
Receptor 7	6.9E-02	1.8E-01	2.5E-01	1.8E-02	3.8E-01	6.0E-01	1.1E-01	3.5E-02	2.8E-01	3.5E-01	2.3E+00
Receptor 8	5.6E-02	4.4E-02	3.5E-01	3.0E-02	3.5E-01	1.1E-01	3.6E-01	1.1E-01	3.0E-01	5.6E-01	2.3E+00
Receptor 9	3.5E-02	1.8E-02	1.3E-01	3.9E-02	1.1E-01	3.5E-02	3.8E-01	6.1E-01	1.6E-01	3.5E-01	1.9E+00
Receptor 10	3.2E-02	4.3E-02	1.0E-01	1.4E-02	1.1E-01	6.1E-01	3.8E-01	3.5E-02	1.3E-01	3.5E-01	1.8E+00
Total	1.4E+00	1.5E+00	2.6E+00	1.4E+00	2.4E+00	1.7E+00	1.6E+00	1.8E+00	3.5E+00	2.8E+00	2.1E+01

Title : Youngs

put File : C:\RESBLD\JYBASE1D.I Evaluation Time: 2.00000 years

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	2.41E-01	1.67E-07	5.86E-10	4.97E-03	1.11E-08	2.71E-05
2	2.48E-01	1.67E-07	5.86E-10	4.97E-03	1.11E-08	2.71E-05
3	3.81E-01	1.67E-07	5.86E-10	4.97E-03	1.11E-08	2.71E-05
4	1.01E-01	1.67E-07	5.86E-10	4.97E-03	1.11E-08	2.71E-05
5	1.02E-01	1.67E-07	5.86E-10	4.97E-03	1.11E-08	2.71E-05
6	7.99E-02	1.07E-07	3.87E-10	3.28E-03	8.76E-09	1.78E-05
7	6.56E-02	1.07E-07	3.87E-10	3.28E-03	8.76E-09	1.78E-05
8	5.26E-02	1.07E-07	3.87E-10	3.28E-03	8.76E-09	1.78E-05
9	3.19E-02	1.07E-07	3.87E-10	3.28E-03	8.76E-09	1.78E-05
10	2.89E-02	1.07E-07	3.87E-10	3.28E-03	8.76E-09	1.78E-05
Total	1.33E+00	1.37E-06	4.87E-09	4.13E-02	9.94E-08	2.24E-04

Source: 2

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.76E-02	8.34E-08	2.93E-10	2.49E-03	5.56E-09	1.35E-05
2	5.61E-01	8.34E-08	2.93E-10	2.49E-03	5.56E-09	1.35E-05
3	6.54E-02	8.34E-08	2.93E-10	2.49E-03	5.56E-09	1.35E-05
4	1.76E-02	8.34E-08	2.93E-10	2.49E-03	5.56E-09	1.35E-05
5	5.61E-01	8.34E-08	2.93E-10	2.49E-03	5.56E-09	1.35E-05
6	2.39E-02	5.36E-08	1.93E-10	1.64E-03	4.38E-09	8.92E-06
7	1.79E-01	5.36E-08	1.93E-10	1.64E-03	4.38E-09	8.92E-06
8	4.23E-02	5.36E-08	1.93E-10	1.64E-03	4.38E-09	8.92E-06
9	1.60E-02	5.36E-08	1.93E-10	1.64E-03	4.38E-09	8.92E-06
10	4.17E-02	5.36E-08	1.93E-10	1.64E-03	4.38E-09	8.92E-06
Total	1.52E+00	6.85E-07	2.43E-09	2.06E-02	4.97E-08	1.12E-04

Source: 3

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.02E-01	1.67E-07	5.86E-10	4.97E-03	1.11E-08	2.71E-05
2	1.02E-01	1.67E-07	5.86E-10	4.97E-03	1.11E-08	2.71E-05
3	3.81E-01	1.67E-07	5.86E-10	4.97E-03	1.11E-08	2.71E-05
4	2.45E-01	1.67E-07	5.86E-10	4.97E-03	1.11E-08	2.71E-05
5	2.45E-01	1.67E-07	5.86E-10	4.97E-03	1.11E-08	2.71E-05
6	7.06E-01	1.07E-07	3.87E-10	3.28E-03	8.76E-09	1.78E-05
7	2.45E-01	1.07E-07	3.87E-10	3.28E-03	8.76E-09	1.78E-05
8	3.49E-01	1.07E-07	3.87E-10	3.28E-03	8.76E-09	1.78E-05
9	1.30E-01	1.07E-07	3.87E-10	3.28E-03	8.76E-09	1.78E-05
10	9.73E-02	1.07E-07	3.87E-10	3.28E-03	8.76E-09	1.78E-05
Total	2.60E+00	1.37E-06	4.87E-09	4.13E-02	9.94E-08	2.24E-04

* RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:55 Page: 3- 3 : 52 **
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 2.00000 years

Source: 4

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	5.61E-01	8.34E-08	2.93E-10	2.49E-03	5.56E-09	1.35E-05
2	1.76E-02	8.34E-08	2.93E-10	2.49E-03	5.56E-09	1.35E-05
3	6.54E-02	8.34E-08	2.93E-10	2.49E-03	5.56E-09	1.35E-05
4	5.61E-01	8.34E-08	2.93E-10	2.49E-03	5.56E-09	1.35E-05
5	1.76E-02	8.34E-08	2.93E-10	2.49E-03	5.56E-09	1.35E-05
6	1.10E-01	5.36E-08	1.93E-10	1.64E-03	4.38E-09	8.92E-06
7	1.61E-02	5.36E-08	1.93E-10	1.64E-03	4.38E-09	8.92E-06
8	2.88E-02	5.36E-08	1.93E-10	1.64E-03	4.38E-09	8.92E-06
9	3.70E-02	5.36E-08	1.93E-10	1.64E-03	4.38E-09	8.92E-06
10	1.19E-02	5.36E-08	1.93E-10	1.64E-03	4.38E-09	8.92E-06
Total	1.43E+00	6.85E-07	2.43E-09	2.06E-02	4.97E-08	1.12E-04

Source: 5

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	8.28E-02	1.09E-07	3.82E-10	3.24E-03	8.20E-09	1.76E-05
2	1.16E-01	1.09E-07	3.82E-10	3.24E-03	8.20E-09	1.76E-05
3	3.54E-01	1.09E-07	3.82E-10	3.24E-03	8.20E-09	1.76E-05
4	1.57E-01	1.09E-07	3.82E-10	3.24E-03	8.20E-09	1.76E-05
5	3.76E-01	1.09E-07	3.82E-10	3.24E-03	8.20E-09	1.76E-05
6	3.76E-01	1.45E-07	5.24E-10	4.44E-03	1.04E-08	2.42E-05
7	3.76E-01	1.45E-07	5.24E-10	4.44E-03	1.04E-08	2.42E-05
8	3.48E-01	1.45E-07	5.24E-10	4.44E-03	1.04E-08	2.42E-05
9	1.10E-01	1.45E-07	5.24E-10	4.44E-03	1.04E-08	2.42E-05
10	1.10E-01	1.45E-07	5.24E-10	4.44E-03	1.04E-08	2.42E-05
Total	2.41E+00	1.27E-06	4.53E-09	3.84E-02	9.32E-08	2.09E-04

Source: 6

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.44E-02	6.72E-08	2.36E-10	2.00E-03	5.08E-09	1.09E-05
2	5.10E-02	6.72E-08	2.36E-10	2.00E-03	5.08E-09	1.09E-05
3	4.18E-02	6.72E-08	2.36E-10	2.00E-03	5.08E-09	1.09E-05
4	1.93E-02	6.72E-08	2.36E-10	2.00E-03	5.08E-09	1.09E-05
5	2.02E-01	6.72E-08	2.36E-10	2.00E-03	5.08E-09	1.09E-05
6	3.20E-02	8.99E-08	3.24E-10	2.75E-03	6.46E-09	1.50E-05
7	5.97E-01	8.99E-08	3.24E-10	2.75E-03	6.46E-09	1.50E-05
8	1.09E-01	8.99E-08	3.24E-10	2.75E-03	6.46E-09	1.50E-05
9	3.21E-02	8.99E-08	3.24E-10	2.75E-03	6.46E-09	1.50E-05
10	6.07E-01	8.99E-08	3.24E-10	2.75E-03	6.46E-09	1.50E-05
Total	1.71E+00	7.85E-07	2.80E-09	2.38E-02	5.77E-08	1.29E-04

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 2.00000 years

Source: 7

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	2.64E-02	1.09E-07	3.82E-10	3.24E-03	8.20E-09	1.76E-05
2	2.97E-02	1.09E-07	3.82E-10	3.24E-03	8.20E-09	1.76E-05
3	5.03E-02	1.09E-07	3.82E-10	3.24E-03	8.20E-09	1.76E-05
4	5.41E-02	1.09E-07	3.82E-10	3.24E-03	8.20E-09	1.76E-05
5	6.78E-02	1.09E-07	3.82E-10	3.24E-03	8.20E-09	1.76E-05
6	1.10E-01	1.45E-07	5.24E-10	4.44E-03	1.04E-08	2.42E-05
7	1.10E-01	1.45E-07	5.24E-10	4.44E-03	1.04E-08	2.42E-05
8	3.54E-01	1.45E-07	5.24E-10	4.44E-03	1.04E-08	2.42E-05
9	3.77E-01	1.45E-07	5.24E-10	4.44E-03	1.04E-08	2.42E-05
10	3.77E-01	1.45E-07	5.24E-10	4.44E-03	1.04E-08	2.42E-05
Total	1.56E+00	1.27E-06	4.53E-09	3.84E-02	9.32E-08	2.09E-04

Source: 8

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	5.11E-02	6.72E-08	2.36E-10	2.00E-03	5.08E-09	1.09E-05
2	1.94E-02	6.72E-08	2.36E-10	2.00E-03	5.08E-09	1.09E-05
3	6.12E-02	6.72E-08	2.36E-10	2.00E-03	5.08E-09	1.09E-05
4	2.02E-01	6.72E-08	2.36E-10	2.00E-03	5.08E-09	1.09E-05
5	2.84E-02	6.72E-08	2.36E-10	2.00E-03	5.08E-09	1.09E-05
6	5.97E-01	8.99E-08	3.24E-10	2.75E-03	6.46E-09	1.50E-05
7	3.20E-02	8.99E-08	3.24E-10	2.75E-03	6.46E-09	1.50E-05
8	1.09E-01	8.99E-08	3.24E-10	2.75E-03	6.46E-09	1.50E-05
9	6.07E-01	8.99E-08	3.24E-10	2.75E-03	6.46E-09	1.50E-05
10	3.21E-02	8.99E-08	3.24E-10	2.75E-03	6.46E-09	1.50E-05
Total	1.74E+00	7.85E-07	2.80E-09	2.38E-02	5.77E-08	1.29E-04

Source: 9

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	3.68E-01	3.47E-07	1.22E-09	1.03E-02	2.32E-08	5.63E-05
2	3.68E-01	3.47E-07	1.22E-09	1.03E-02	2.32E-08	5.63E-05
3	7.31E-01	3.47E-07	1.22E-09	1.03E-02	2.32E-08	5.63E-05
4	3.68E-01	3.47E-07	1.22E-09	1.03E-02	2.32E-08	5.63E-05
5	3.68E-01	3.47E-07	1.22E-09	1.03E-02	2.32E-08	5.63E-05
6	4.10E-01	2.23E-07	8.04E-10	6.82E-03	1.82E-08	3.71E-05
7	2.78E-01	2.23E-07	8.04E-10	6.82E-03	1.82E-08	3.71E-05
8	2.95E-01	2.23E-07	8.04E-10	6.82E-03	1.82E-08	3.71E-05
9	1.52E-01	2.23E-07	8.04E-10	6.82E-03	1.82E-08	3.71E-05
10	1.25E-01	2.23E-07	8.04E-10	6.82E-03	1.82E-08	3.71E-05
Total	3.46E+00	2.85E-06	1.01E-08	8.59E-02	2.07E-07	4.67E-04

** RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:55 Page: 3- 3 : 54 **

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 2.00000 years

Source: 10

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	9.28E-02	1.98E-07	6.98E-10	5.92E-03	1.50E-08	3.22E-05
2	1.15E-01	1.98E-07	6.98E-10	5.92E-03	1.50E-08	3.22E-05
3	2.25E-01	1.98E-07	6.98E-10	5.92E-03	1.50E-08	3.22E-05
4	1.72E-01	1.98E-07	6.98E-10	5.92E-03	1.50E-08	3.22E-05
5	2.53E-01	1.98E-07	6.98E-10	5.92E-03	1.50E-08	3.22E-05
6	3.37E-01	2.66E-07	9.58E-10	8.12E-03	1.91E-08	4.42E-05
7	3.37E-01	2.66E-07	9.58E-10	8.12E-03	1.91E-08	4.42E-05
8	5.51E-01	2.66E-07	9.58E-10	8.12E-03	1.91E-08	4.42E-05
9	3.38E-01	2.66E-07	9.58E-10	8.12E-03	1.91E-08	4.42E-05
10	3.38E-01	2.66E-07	9.58E-10	8.12E-03	1.91E-08	4.42E-05
Total	2.76E+00	2.32E-06	8.28E-09	7.02E-02	1.70E-07	3.82E-04

Nuclide Detail of Doses

[mrem]

Source: 1

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	1.92E-01	1.98E-01	3.02E-01	8.23E-02	8.32E-02	6.48E-02	5.34E-02	4.33E-02	2.69E-02	2.46E-02	1.07E+00
U-234	1.88E-08	1.90E-08	2.20E-08	1.61E-08	1.61E-08	1.08E-08	1.05E-08	1.02E-08	9.80E-09	9.75E-09	1.43E-07
TH-230	4.36E-13	4.40E-13	5.14E-13	3.64E-13	3.64E-13	2.45E-13	2.38E-13	2.31E-13	2.20E-13	2.19E-13	3.27E-12
RA-226	1.79E-13	1.83E-13	2.68E-13	8.69E-14	8.76E-14	6.96E-14	5.99E-14	5.20E-14	3.81E-14	3.60E-14	1.06E-12
PB-210	3.64E-18	3.74E-18	6.22E-18	1.74E-18	1.76E-18	1.29E-18	1.08E-18	8.46E-19	5.31E-19	4.93E-19	2.14E-17
U-235											
U-235	5.05E-02	5.20E-02	7.98E-02	2.11E-02	2.13E-02	1.64E-02	1.35E-02	1.07E-02	6.42E-03	5.83E-03	2.78E-01
PA-231	5.33E-07	5.47E-07	8.13E-07	2.52E-07	2.55E-07	1.92E-07	1.64E-07	1.37E-07	9.60E-08	9.01E-08	3.08E-06
AC-227	1.68E-07	1.73E-07	2.60E-07	7.48E-08	7.55E-08	5.79E-08	4.84E-08	3.98E-08	2.61E-08	2.41E-08	9.48E-07
U-234											
U-234	3.49E-03	3.52E-03	4.09E-03	2.99E-03	2.99E-03	2.00E-03	1.95E-03	1.90E-03	1.82E-03	1.81E-03	2.66E-02
TH-230	1.62E-07	1.63E-07	1.91E-07	1.35E-07	1.35E-07	9.12E-08	8.85E-08	8.57E-08	8.17E-08	8.12E-08	1.22E-06
RA-226	1.01E-07	1.03E-07	1.51E-07	4.89E-08	4.93E-08	3.92E-08	3.37E-08	2.93E-08	2.15E-08	2.03E-08	5.97E-07
PB-210	2.44E-12	2.51E-12	4.17E-12	1.17E-12	1.18E-12	8.67E-13	7.26E-13	5.67E-13	3.56E-13	3.30E-13	1.43E-11

Source: 2

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	1.51E-02	4.42E-01	5.28E-02	1.51E-02	4.42E-01	1.98E-02	1.42E-01	3.41E-02	1.34E-02	3.35E-02	1.21E+00
U-234	7.32E-09	1.87E-08	8.33E-09	7.32E-09	1.87E-08	5.07E-09	8.35E-09	5.50E-09	4.92E-09	5.49E-09	8.96E-08
TH-230	1.64E-13	4.55E-13	1.89E-13	1.64E-13	4.55E-13	1.14E-13	1.98E-13	1.25E-13	1.10E-13	1.25E-13	2.10E-12
RA-226	2.23E-14	3.73E-13	5.35E-14	2.23E-14	3.73E-13	2.43E-14	1.24E-13	3.56E-14	1.88E-14	3.48E-14	1.08E-12
PB-210	3.21E-19	8.73E-18	1.09E-18	3.21E-19	8.73E-18	3.94E-19	2.82E-18	7.24E-19	2.83E-19	7.02E-19	2.41E-17
U-235											
U-235	3.56E-03	1.18E-01	1.35E-02	3.56E-03	1.18E-01	4.88E-03	3.77E-02	8.81E-03	3.27E-03	8.80E-03	3.20E-01
PA-231	5.97E-08	1.15E-06	1.56E-07	5.97E-08	1.15E-06	6.40E-08	3.76E-07	1.01E-07	4.81E-08	9.99E-08	3.26E-06
AC-227	1.54E-08	3.76E-07	4.71E-08	1.54E-08	3.76E-07	1.83E-08	1.22E-07	3.05E-08	1.31E-08	3.02E-08	1.04E-06
U-234											
U-234	1.36E-03	3.47E-03	1.55E-03	1.36E-03	3.47E-03	9.40E-04	1.55E-03	1.02E-03	9.13E-04	1.02E-03	1.66E-02
TH-230	6.08E-08	1.69E-07	7.03E-08	6.08E-08	1.69E-07	4.24E-08	7.36E-08	4.63E-08	4.10E-08	4.63E-08	7.80E-07
RA-226	1.25E-08	2.10E-07	3.01E-08	1.25E-08	2.10E-07	1.37E-08	6.98E-08	2.01E-08	1.06E-08	1.96E-08	6.09E-07
PB-210	2.15E-13	5.85E-12	7.31E-13	2.15E-13	5.85E-12	2.64E-13	1.89E-12	4.85E-13	1.89E-13	4.71E-13	1.62E-11

** RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:55 Page: 3- 4 : 56 **

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 2.00000 years

Source: 3

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	8.27E-02	8.27E-02	3.02E-01	1.95E-01	1.95E-01	5.57E-01	1.94E-01	2.77E-01	1.05E-01	7.83E-02	2.07E+00
U-234	1.61E-08	1.61E-08	2.20E-08	1.89E-08	1.89E-08	2.32E-08	1.41E-08	1.66E-08	1.19E-08	1.12E-08	1.69E-07
TH-230	3.64E-13	3.64E-13	5.14E-13	4.38E-13	4.38E-13	5.72E-13	3.32E-13	3.91E-13	2.73E-13	2.56E-13	3.94E-12
RA-226	8.72E-14	8.72E-14	2.68E-13	1.81E-13	1.81E-13	4.80E-13	1.77E-13	2.43E-13	1.02E-13	8.01E-14	1.89E-12
PB-210	1.75E-18	1.75E-18	6.22E-18	3.69E-18	3.69E-18	1.02E-17	3.63E-18	5.65E-18	2.12E-18	1.61E-18	4.03E-17
U-235											
U-235	2.12E-02	2.12E-02	7.98E-02	5.13E-02	5.13E-02	1.48E-01	5.12E-02	7.30E-02	2.71E-02	2.02E-02	5.44E-01
PA-231	2.53E-07	2.53E-07	8.14E-07	5.40E-07	5.40E-07	1.45E-06	5.23E-07	7.33E-07	2.94E-07	2.27E-07	5.62E-06
AC-227	7.51E-08	7.51E-08	2.60E-07	1.70E-07	1.70E-07	4.74E-07	1.68E-07	2.36E-07	9.13E-08	6.94E-08	1.79E-06
U-234											
U-234	2.99E-03	2.99E-03	4.09E-03	3.51E-03	3.51E-03	4.31E-03	2.62E-03	3.07E-03	2.21E-03	2.08E-03	3.14E-02
TH-230	1.35E-07	1.35E-07	1.91E-07	1.63E-07	1.63E-07	2.13E-07	1.23E-07	1.45E-07	1.01E-07	9.49E-08	1.46E-06
RA-226	4.91E-08	4.91E-08	1.51E-07	1.02E-07	1.02E-07	2.70E-07	9.95E-08	1.37E-07	5.75E-08	4.51E-08	1.06E-06
PB-210	1.18E-12	1.18E-12	4.17E-12	2.47E-12	2.47E-12	6.85E-12	2.43E-12	3.79E-12	1.42E-12	1.08E-12	2.70E-11

Source: 4

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	4.42E-01	1.51E-02	5.28E-02	4.42E-01	1.51E-02	8.75E-02	1.36E-02	2.35E-02	2.98E-02	1.02E-02	1.13E+00
U-234	1.87E-08	7.32E-09	8.33E-09	1.87E-08	7.32E-09	7.02E-09	4.91E-09	5.19E-09	5.43E-09	4.83E-09	8.77E-08
TH-230	4.55E-13	1.64E-13	1.89E-13	4.55E-13	1.64E-13	1.62E-13	1.10E-13	1.17E-13	1.22E-13	1.08E-13	2.05E-12
RA-226	3.73E-13	2.23E-14	5.35E-14	3.73E-13	2.23E-14	7.91E-14	1.92E-14	2.72E-14	3.17E-14	1.62E-14	1.02E-12
PB-210	8.73E-18	3.21E-19	1.09E-18	8.73E-18	3.21E-19	1.86E-18	2.71E-19	4.87E-19	6.64E-19	2.15E-19	2.27E-17
U-235											
U-235	1.18E-01	3.56E-03	1.35E-02	1.18E-01	3.56E-03	2.31E-02	3.26E-03	5.94E-03	7.78E-03	2.41E-03	2.99E-01
PA-231	1.15E-06	5.97E-08	1.56E-07	1.15E-06	5.97E-08	2.38E-07	4.84E-08	7.38E-08	9.05E-08	4.00E-08	3.06E-06
AC-227	3.76E-07	1.54E-08	4.71E-08	3.76E-07	1.54E-08	7.55E-08	1.32E-08	2.16E-08	2.70E-08	1.04E-08	9.78E-07
U-234											
U-234	3.47E-03	1.36E-03	1.55E-03	3.47E-03	1.36E-03	1.30E-03	9.11E-04	9.63E-04	1.01E-03	8.97E-04	1.63E-02
TH-230	1.69E-07	6.08E-08	7.03E-08	1.69E-07	6.08E-08	6.02E-08	4.09E-08	4.35E-08	4.55E-08	4.02E-08	7.60E-07
RA-226	2.10E-07	1.25E-08	3.01E-08	2.10E-07	1.25E-08	4.45E-08	1.08E-08	1.53E-08	1.78E-08	9.10E-09	5.73E-07
PB-210	5.85E-12	2.15E-13	7.31E-13	5.85E-12	2.15E-13	1.25E-12	1.82E-13	3.27E-13	4.45E-13	1.44E-13	1.52E-11

** RAI LD gra tpu ers 2. 6/1 12 Pag 3- 4 5
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 2.00000 years

Source: 5

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	6.68E-02	9.32E-02	2.80E-01	1.25E-01	2.98E-01	2.98E-01	2.98E-01	2.76E-01	8.91E-02	8.91E-02	1.91E+00
U-234	1.08E-08	1.15E-08	1.66E-08	1.22E-08	1.66E-08	2.00E-08	2.00E-08	1.98E-08	1.48E-08	1.48E-08	1.57E-07
TH-230	2.46E-13	2.63E-13	3.91E-13	2.84E-13	3.99E-13	4.74E-13	4.74E-13	4.63E-13	3.35E-13	3.35E-13	3.66E-12
RA-226	6.94E-14	9.15E-14	2.45E-13	1.18E-13	2.62E-13	2.66E-13	2.66E-13	2.45E-13	9.17E-14	9.17E-14	1.75E-12
PB-210	1.40E-18	1.91E-18	5.73E-18	2.37E-18	5.52E-18	5.56E-18	5.56E-18	5.68E-18	1.86E-18	1.86E-18	3.74E-17
U-235											
U-235	1.72E-02	2.41E-02	7.40E-02	3.28E-02	7.87E-02	7.88E-02	7.88E-02	7.28E-02	2.29E-02	2.29E-02	5.03E-01
PA-231	1.98E-07	2.65E-07	7.41E-07	3.46E-07	7.86E-07	7.98E-07	7.98E-07	7.42E-07	2.65E-07	2.65E-07	5.20E-06
AC-227	5.98E-08	8.19E-08	2.39E-07	1.09E-07	2.55E-07	2.57E-07	2.57E-07	2.37E-07	7.98E-08	7.98E-08	1.66E-06
U-234											
U-234	2.01E-03	2.13E-03	3.07E-03	2.27E-03	3.08E-03	3.71E-03	3.71E-03	3.68E-03	2.74E-03	2.74E-03	2.92E-02
TH-230	9.12E-08	9.77E-08	1.45E-07	1.05E-07	1.48E-07	1.76E-07	1.76E-07	1.72E-07	1.24E-07	1.24E-07	1.36E-06
RA-226	3.91E-08	5.15E-08	1.38E-07	6.62E-08	1.48E-07	1.50E-07	1.50E-07	1.38E-07	5.16E-08	5.16E-08	9.84E-07
PB-210	9.35E-13	1.28E-12	3.84E-12	1.59E-12	3.70E-12	3.73E-12	3.73E-12	3.81E-12	1.24E-12	1.24E-12	2.51E-11

Source: 6

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	1.24E-02	4.10E-02	3.40E-02	1.63E-02	1.60E-01	2.67E-02	4.71E-01	8.69E-02	2.67E-02	4.78E-01	1.35E+00
U-234	5.91E-09	6.70E-09	6.49E-09	5.99E-09	9.80E-09	8.34E-09	2.00E-08	9.99E-09	8.34E-09	2.02E-08	1.02E-07
TH-230	1.32E-13	1.52E-13	1.47E-13	1.34E-13	2.33E-13	1.88E-13	4.89E-13	2.29E-13	1.88E-13	4.94E-13	2.39E-12
RA-226	1.92E-14	4.22E-14	3.69E-14	2.26E-14	1.41E-13	3.36E-14	4.00E-13	8.31E-14	3.36E-14	4.06E-13	1.22E-12
PB-210	2.62E-19	8.46E-19	7.10E-19	3.25E-19	3.14E-18	5.47E-19	9.14E-18	1.80E-18	5.48E-19	9.28E-18	2.66E-17
U-235											
U-235	2.92E-03	1.08E-02	8.67E-03	3.89E-03	4.25E-02	6.54E-03	1.25E-01	2.26E-02	6.55E-03	1.27E-01	3.57E-01
PA-231	4.86E-08	1.22E-07	1.04E-07	5.82E-08	4.26E-07	9.12E-08	1.22E-06	2.45E-07	9.13E-08	1.24E-06	3.65E-06
AC-227	1.26E-08	3.70E-08	3.08E-08	1.58E-08	1.38E-07	2.54E-08	4.01E-07	7.61E-08	2.54E-08	4.07E-07	1.17E-06
U-234											
U-234	1.10E-03	1.24E-03	1.20E-03	1.11E-03	1.82E-03	1.55E-03	3.71E-03	1.85E-03	1.55E-03	3.75E-03	1.89E-02
TH-230	4.91E-08	5.66E-08	5.46E-08	4.99E-08	8.64E-08	6.97E-08	1.82E-07	8.50E-08	6.97E-08	1.83E-07	8.86E-07
RA-226	1.08E-08	2.38E-08	2.08E-08	1.27E-08	7.92E-08	1.89E-08	2.25E-07	4.68E-08	1.89E-08	2.29E-07	6.86E-07
PB-210	1.75E-13	5.67E-13	4.76E-13	2.18E-13	2.10E-12	3.67E-13	6.13E-12	1.20E-12	3.67E-13	6.22E-12	1.78E-11

** RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:55 Page: 3- 4 : 58 **

Title : Youngs

Input File : C:\RESBLD\JYBASE1.D.IEvaluation Time: 2.00000 years

Source: 7

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	2.25E-02	2.52E-02	4.14E-02	4.43E-02	5.51E-02	8.91E-02	8.91E-02	2.80E-01	2.99E-01	2.99E-01	1.24E+00
U-234	9.59E-09	9.65E-09	1.00E-08	1.02E-08	1.04E-08	1.48E-08	1.48E-08	1.99E-08	2.00E-08	2.00E-08	1.39E-07
TH-230	2.15E-13	2.16E-13	2.27E-13	2.30E-13	2.37E-13	3.35E-13	3.35E-13	4.66E-13	4.74E-13	4.74E-13	3.21E-12
RA-226	3.32E-14	3.56E-14	4.94E-14	5.12E-14	6.04E-14	9.17E-14	9.17E-14	2.49E-13	2.66E-13	2.66E-13	1.20E-12
PB-210	4.59E-19	5.02E-19	8.10E-19	9.08E-19	1.11E-18	1.86E-18	1.86E-18	5.77E-18	5.57E-18	5.57E-18	2.44E-17
U-235											
U-235	5.32E-03	6.00E-03	1.02E-02	1.11E-02	1.39E-02	2.29E-02	2.29E-02	7.39E-02	7.89E-02	7.89E-02	3.24E-01
PA-231	8.46E-08	9.13E-08	1.32E-07	1.40E-07	1.68E-07	2.65E-07	2.65E-07	7.53E-07	7.99E-07	7.99E-07	3.50E-06
AC-227	2.24E-08	2.46E-08	3.82E-08	4.07E-08	4.98E-08	7.98E-08	7.98E-08	2.41E-07	2.57E-07	2.57E-07	1.09E-06
U-234											
U-234	1.78E-03	1.79E-03	1.87E-03	1.89E-03	1.94E-03	2.74E-03	2.74E-03	3.70E-03	3.71E-03	3.71E-03	2.59E-02
TH-230	7.98E-08	8.04E-08	8.43E-08	8.53E-08	8.79E-08	1.24E-07	1.24E-07	1.73E-07	1.76E-07	1.76E-07	1.19E-06
RA-226	1.87E-08	2.01E-08	2.78E-08	2.88E-08	3.40E-08	5.16E-08	5.16E-08	1.40E-07	1.50E-07	1.50E-07	6.73E-07
PB-210	3.07E-13	3.37E-13	5.43E-13	6.08E-13	7.42E-13	1.24E-12	1.24E-12	3.87E-12	3.73E-12	3.73E-12	1.64E-11

Source: 8

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	4.11E-02	1.63E-02	4.91E-02	1.59E-01	2.35E-02	4.71E-01	2.67E-02	8.69E-02	4.78E-01	2.67E-02	1.38E+00
U-234	6.71E-09	6.01E-09	6.95E-09	9.80E-09	6.18E-09	2.00E-08	8.34E-09	9.99E-09	2.02E-08	8.34E-09	1.03E-07
TH-230	1.52E-13	1.35E-13	1.58E-13	2.32E-13	1.39E-13	4.89E-13	1.88E-13	2.29E-13	4.94E-13	1.88E-13	2.40E-12
RA-226	4.22E-14	2.24E-14	4.90E-14	1.40E-13	2.86E-14	4.00E-13	3.36E-14	8.31E-14	4.06E-13	3.36E-14	1.24E-12
PB-210	8.50E-19	3.43E-19	1.05E-18	3.14E-18	4.69E-19	9.14E-18	5.47E-19	1.80E-18	9.28E-18	5.48E-19	2.72E-17
U-235											
U-235	1.08E-02	3.97E-03	1.28E-02	4.24E-02	5.80E-03	1.25E-01	6.54E-03	2.26E-02	1.27E-01	6.55E-03	3.64E-01
PA-231	1.22E-07	5.86E-08	1.43E-07	4.24E-07	7.66E-08	1.22E-06	9.12E-08	2.45E-07	1.24E-06	9.13E-08	3.72E-06
AC-227	3.70E-08	1.59E-08	4.36E-08	1.37E-07	2.19E-08	4.01E-07	2.54E-08	7.61E-08	4.07E-07	2.54E-08	1.19E-06
U-234											
U-234	1.24E-03	1.12E-03	1.29E-03	1.82E-03	1.15E-03	3.71E-03	1.55E-03	1.85E-03	3.75E-03	1.55E-03	1.90E-02
TH-230	5.66E-08	5.01E-08	5.86E-08	8.63E-08	5.17E-08	1.82E-07	6.97E-08	8.50E-08	1.83E-07	6.97E-08	8.93E-07
RA-226	2.38E-08	1.26E-08	2.76E-08	7.88E-08	1.61E-08	2.25E-07	1.89E-08	4.68E-08	2.29E-07	1.89E-08	6.97E-07
PB-210	5.70E-13	2.30E-13	7.04E-13	2.10E-12	3.14E-13	6.13E-12	3.67E-13	1.20E-12	6.22E-12	3.67E-13	1.82E-11

** RADLD program tpuvers 2.1 6/1 12 Page 3- 4 5
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 2.00000 years

Source: 9

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238	2.95E-01	2.95E-01	5.81E-01	2.95E-01	2.95E-01	3.27E-01	2.22E-01	2.36E-01	1.23E-01	1.02E-01	2.77E+00
U-234	3.65E-08	3.65E-08	4.38E-08	3.65E-08	3.65E-08	2.74E-08	2.48E-08	2.51E-08	2.23E-08	2.17E-08	3.11E-07
TH-230	8.39E-13	8.39E-13	1.03E-12	8.39E-13	8.39E-13	6.41E-13	5.71E-13	5.80E-13	5.06E-13	4.92E-13	7.17E-12
RA-226	2.84E-13	2.84E-13	5.23E-13	2.84E-13	2.84E-13	3.03E-13	2.16E-13	2.27E-13	1.32E-13	1.15E-13	2.65E-12
PB-210	5.88E-18	5.88E-18	1.13E-17	5.88E-18	5.88E-18	6.39E-18	4.41E-18	4.66E-18	2.52E-18	2.12E-18	5.49E-17
U-235											
U-235	7.68E-02	7.68E-02	1.52E-01	7.68E-02	7.68E-02	8.56E-02	5.80E-02	6.15E-02	3.17E-02	2.62E-02	7.22E-01
PA-231	8.39E-07	8.39E-07	1.57E-06	8.39E-07	8.39E-07	8.90E-07	6.24E-07	6.58E-07	3.72E-07	3.18E-07	7.79E-06
AC-227	2.60E-07	2.60E-07	5.01E-07	2.60E-07	2.60E-07	2.83E-07	1.95E-07	2.06E-07	1.11E-07	9.35E-08	2.43E-06
U-234											
U-234	6.78E-03	6.78E-03	8.13E-03	6.78E-03	6.78E-03	5.09E-03	4.60E-03	4.67E-03	4.14E-03	4.04E-03	5.78E-02
TH-230	3.11E-07	3.11E-07	3.82E-07	3.11E-07	3.11E-07	2.38E-07	2.12E-07	2.15E-07	1.88E-07	1.83E-07	2.66E-06
RA-226	1.60E-07	1.60E-07	2.95E-07	1.60E-07	1.60E-07	1.71E-07	1.21E-07	1.28E-07	7.46E-08	6.47E-08	1.49E-06
PB-210	3.94E-12	3.94E-12	7.58E-12	3.94E-12	3.94E-12	4.28E-12	2.95E-12	3.12E-12	1.69E-12	1.42E-12	3.68E-11

Source: 10

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	7.59E-02	9.30E-02	1.80E-01	1.38E-01	2.02E-01	2.70E-01	2.70E-01	4.38E-01	2.70E-01	2.70E-01	2.21E+00
U-234	1.86E-08	1.90E-08	2.12E-08	2.02E-08	2.18E-08	2.97E-08	2.97E-08	3.40E-08	2.97E-08	2.97E-08	2.54E-07
TH-230	4.19E-13	4.30E-13	4.88E-13	4.60E-13	5.03E-13	6.84E-13	6.84E-13	7.96E-13	6.85E-13	6.85E-13	5.83E-12
RA-226	8.77E-14	1.02E-13	1.75E-13	1.40E-13	1.93E-13	2.56E-13	2.56E-13	3.96E-13	2.57E-13	2.57E-13	2.12E-12
PB-210	1.63E-18	1.96E-18	3.65E-18	2.84E-18	4.07E-18	5.44E-18	5.44E-18	8.70E-18	5.46E-18	5.46E-18	4.47E-17
U-235											
U-235	1.94E-02	2.40E-02	4.69E-02	3.59E-02	5.27E-02	7.04E-02	7.04E-02	1.15E-01	7.06E-02	7.06E-02	5.76E-01
PA-231	2.45E-07	2.88E-07	5.09E-07	4.03E-07	5.65E-07	7.56E-07	7.56E-07	1.18E-06	7.58E-07	7.58E-07	6.22E-06
AC-227	7.07E-08	8.51E-08	1.58E-07	1.23E-07	1.77E-07	2.36E-07	2.36E-07	3.77E-07	2.37E-07	2.37E-07	1.94E-06
U-234											
U-234	3.45E-03	3.53E-03	3.94E-03	3.75E-03	4.05E-03	5.52E-03	5.52E-03	6.32E-03	5.52E-03	5.52E-03	4.71E-02
TH-230	1.55E-07	1.60E-07	1.81E-07	1.71E-07	1.87E-07	2.54E-07	2.54E-07	2.96E-07	2.54E-07	2.54E-07	2.17E-06
RA-226	4.94E-08	5.75E-08	9.84E-08	7.87E-08	1.09E-07	1.44E-07	1.44E-07	2.23E-07	1.45E-07	1.45E-07	1.19E-06
PB-210	1.09E-12	1.32E-12	2.45E-12	1.90E-12	2.73E-12	3.65E-12	3.65E-12	5.83E-12	3.66E-12	3.66E-12	2.99E-11

** RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:57 Page: 4- 1 : 60 **
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 5.00000 years

=====
Assessment for Time: 4
Time =5.00E+00 yr
=====

----- Source Information -----

Source: 1

Location:: Room : 1 x: 18.20 y: 0.00 z: 4.40 [m]
Geometry:: Type: Area Area:3.22E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.149E+06
	U-235	9.997E+04
	U-234	2.259E+06
	PA-231	1.057E+01
	TH-230	1.018E+02
	AC-227	8.012E-01
	RA-226	1.102E-01
	PB-210	5.497E-03

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 5.00000 years

Source: 2

Location:: Room : 1 x: 0.00 y: 9.15 z: 4.40 [m]
Geometry:: Type: Area Area:1.61E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.149E+06
 U-235 9.997E+04
 U-234 2.259E+06
 PA-231 1.057E+01
 TH-230 1.018E+02
 AC-227 8.012E-01
 RA-226 1.102E-01
 PB-210 5.497E-03

Source: 3

Location:: Room : 1 x: 18.30 y: 18.30 z: 4.40 [m]
Geometry:: Type: Area Area:3.22E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.149E+06
 U-235 9.997E+04
 U-234 2.259E+06
 PA-231 1.057E+01
 TH-230 1.018E+02
 AC-227 8.012E-01
 RA-226 1.102E-01
 PB-210 5.497E-03

** RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:57 Page: 4- 1 : 62 **

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 5.00000 years

Source: 4

Location:: Room : 1 x: 36.60 y: 9.15 z: 4.40 [m]
Geometry:: Type: Area Area:1.61E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.149E+06
	U-235	9.997E+04
	U-234	2.259E+06
	PA-231	1.057E+01
	TH-230	1.018E+02
	AC-227	8.012E-01
	RA-226	1.102E-01
	PB-210	5.497E-03

Source: 5

Location:: Room : 2 x: 15.25 y: 18.30 z: 5.20 [m]
Geometry:: Type: Area Area:3.15E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.149E+06
	U-235	9.997E+04
	U-234	2.259E+06
	PA-231	1.057E+01
	TH-230	1.018E+02
	AC-227	8.012E-01
	RA-226	1.102E-01
	PB-210	5.497E-03

** RADIILD program, version 2.10 6/1993 12:01 Page: 4- 1. 69
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 5.00000 years

Source: 6

Location:: Room.: 2 x: 0.00 y: 27.80 z: 5.18 [m]
Geometry:: Type: Area Area:1.95E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.149E+06
 U-235 9.997E+04
 U-234 2.259E+06
 PA-231 1.057E+01
 TH-230 1.018E+02
 AC-227 8.012E-01
 RA-226 1.102E-01
 PB-210 5.497E-03

Source: 7

Location:: Room.: 2 x: 15.25 y: 37.20 z: 5.18 [m]
Geometry:: Type: Area Area:3.15E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.149E+06
 U-235 9.997E+04
 U-234 2.259E+06
 PA-231 1.057E+01
 TH-230 1.018E+02
 AC-227 8.012E-01
 RA-226 1.102E-01
 PB-210 5.497E-03

** RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:57 Page: 4- 1 : 64 **
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 5.00000 years

Source: 8

Location:: Room : 2 x: 30.50 y: 27.80 z: 5.18 [m]
Geometry:: Type: Area Area:1.95E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.149E+06
 U-235 9.997E+04
 U-234 2.259E+06
 PA-231 1.057E+01
 TH-230 1.018E+02
 AC-227 8.012E-01
 RA-226 1.102E-01
 PB-210 5.497E-03

Source: 9

Location:: Room : 1 x: 18.30 y: 9.15 z: 8.80 [m]
Geometry:: Type: Area Area:6.70E+02 [m2] Direction: z
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.149E+06
 U-235 9.997E+04
 U-234 2.259E+06
 PA-231 1.057E+01
 TH-230 1.018E+02
 AC-227 8.012E-01
 RA-226 1.102E-01
 PB-210 5.497E-03

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 5.00000 years

Source: 10

Location:: Room : 2 x: 15.25 y: 27.80 z: 10.36 [m]
Geometry:: Type: Area Area: 5.76E+02 [m²] Direction: z

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-02
Removable fraction: 1.000E-03
Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m ²]
	U-238	2.149E+06
	U-235	9.997E+04
	U-234	2.259E+06
	PA-231	1.057E+01
	TH-230	1.018E+02
	AC-227	8.012E-01
	RA-226	1.102E-01
	PB-210	5.497E-03

** RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:57 Page: 4- 2 : 66 **

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 5.00000 years

RESRAD-BUILD Dose Tables

Receptor Point-Source Doses

[mrem]

	Source 1	Source 2	Source 3	Source 4	Source 5	Source 6	Source 7	Source 8	Source 9	Source 10	Total
Receptor 1	2.5E-01	2.0E-02	1.1E-01	5.6E-01	8.6E-02	1.6E-02	3.0E-02	5.3E-02	3.8E-01	9.9E-02	1.6E+00
Receptor 2	2.5E-01	5.6E-01	1.1E-01	2.0E-02	1.2E-01	5.3E-02	3.3E-02	2.1E-02	3.8E-01	1.2E-01	1.7E+00
Receptor 3	3.9E-01	6.8E-02	3.9E-01	6.8E-02	3.6E-01	4.4E-02	5.4E-02	6.3E-02	7.4E-01	2.3E-01	2.4E+00
Receptor 4	1.1E-01	2.0E-02	2.5E-01	5.6E-01	1.6E-01	2.1E-02	5.7E-02	2.0E-01	3.8E-01	1.8E-01	1.9E+00
Receptor 5	1.1E-01	5.6E-01	2.5E-01	2.0E-02	3.8E-01	2.0E-01	7.1E-02	3.0E-02	3.8E-01	2.6E-01	2.3E+00
Receptor 6	8.3E-02	2.6E-02	7.1E-01	1.1E-01	3.8E-01	3.5E-02	1.1E-01	6.0E-01	4.2E-01	3.5E-01	2.8E+00
Receptor 7	6.9E-02	1.8E-01	2.5E-01	1.8E-02	3.8E-01	6.0E-01	1.1E-01	3.5E-02	2.8E-01	3.5E-01	2.3E+00
Receptor 8	5.6E-02	4.4E-02	3.5E-01	3.0E-02	3.5E-01	1.1E-01	3.6E-01	1.1E-01	3.0E-01	5.6E-01	2.3E+00
Receptor 9	3.5E-02	1.8E-02	1.3E-01	3.9E-02	1.1E-01	3.5E-02	3.8E-01	6.1E-01	1.6E-01	3.5E-01	1.9E+00
Receptor 10	3.2E-02	4.3E-02	1.0E-01	1.4E-02	1.1E-01	6.1E-01	3.8E-01	3.5E-02	1.3E-01	3.5E-01	1.8E+00
Total	1.4E+00	1.5E+00	2.6E+00	1.4E+00	2.4E+00	1.7E+00	1.6E+00	1.8E+00	3.5E+00	2.8E+00	2.1E+01

** RAD-BLD program, Version 2.10, 6/11, 12, Page 1- 3 6
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 5.00000 years

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	2.41E-01	1.67E-07	5.87E-10	4.97E-03	6.95E-08	2.71E-05
2	2.48E-01	1.67E-07	5.87E-10	4.97E-03	6.95E-08	2.71E-05
3	3.81E-01	1.67E-07	5.87E-10	4.97E-03	6.95E-08	2.71E-05
4	1.01E-01	1.67E-07	5.87E-10	4.97E-03	6.95E-08	2.71E-05
5	1.02E-01	1.67E-07	5.87E-10	4.97E-03	6.95E-08	2.71E-05
6	7.99E-02	1.07E-07	3.87E-10	3.28E-03	5.47E-08	1.78E-05
7	6.56E-02	1.07E-07	3.87E-10	3.28E-03	5.47E-08	1.78E-05
8	5.26E-02	1.07E-07	3.87E-10	3.28E-03	5.47E-08	1.78E-05
9	3.19E-02	1.07E-07	3.87E-10	3.28E-03	5.47E-08	1.78E-05
10	2.89E-02	1.07E-07	3.87E-10	3.28E-03	5.47E-08	1.78E-05
Total	1.33E+00	1.37E-06	4.87E-09	4.13E-02	6.21E-07	2.24E-04

Source: 2

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.76E-02	8.34E-08	2.93E-10	2.49E-03	3.48E-08	1.35E-05
2	5.60E-01	8.34E-08	2.93E-10	2.49E-03	3.48E-08	1.35E-05
3	6.54E-02	8.34E-08	2.93E-10	2.49E-03	3.48E-08	1.35E-05
4	1.76E-02	8.34E-08	2.93E-10	2.49E-03	3.48E-08	1.35E-05
5	5.60E-01	8.34E-08	2.93E-10	2.49E-03	3.48E-08	1.35E-05
6	2.39E-02	5.36E-08	1.93E-10	1.64E-03	2.74E-08	8.92E-06
7	1.79E-01	5.36E-08	1.93E-10	1.64E-03	2.74E-08	8.92E-06
8	4.23E-02	5.36E-08	1.93E-10	1.64E-03	2.74E-08	8.92E-06
9	1.60E-02	5.36E-08	1.93E-10	1.64E-03	2.74E-08	8.92E-06
10	4.17E-02	5.36E-08	1.93E-10	1.64E-03	2.74E-08	8.92E-06
Total	1.52E+00	6.85E-07	2.43E-09	2.06E-02	3.11E-07	1.12E-04

Source: 3

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.02E-01	1.67E-07	5.87E-10	4.97E-03	6.95E-08	2.71E-05
2	1.02E-01	1.67E-07	5.87E-10	4.97E-03	6.95E-08	2.71E-05
3	3.81E-01	1.67E-07	5.87E-10	4.97E-03	6.95E-08	2.71E-05
4	2.45E-01	1.67E-07	5.87E-10	4.97E-03	6.95E-08	2.71E-05
5	2.45E-01	1.67E-07	5.87E-10	4.97E-03	6.95E-08	2.71E-05
6	7.06E-01	1.07E-07	3.87E-10	3.28E-03	5.47E-08	1.78E-05
7	2.45E-01	1.07E-07	3.87E-10	3.28E-03	5.47E-08	1.78E-05
8	3.49E-01	1.07E-07	3.87E-10	3.28E-03	5.47E-08	1.78E-05
9	1.30E-01	1.07E-07	3.87E-10	3.28E-03	5.47E-08	1.78E-05
10	9.73E-02	1.07E-07	3.87E-10	3.28E-03	5.47E-08	1.78E-05
Total	2.60E+00	1.37E-06	4.87E-09	4.13E-02	6.21E-07	2.24E-04

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 5.00000 years

Source: 4

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	5.60E-01	8.34E-08	2.93E-10	2.49E-03	3.48E-08	1.35E-05
2	1.76E-02	8.34E-08	2.93E-10	2.49E-03	3.48E-08	1.35E-05
3	6.54E-02	8.34E-08	2.93E-10	2.49E-03	3.48E-08	1.35E-05
4	5.60E-01	8.34E-08	2.93E-10	2.49E-03	3.48E-08	1.35E-05
5	1.76E-02	8.34E-08	2.93E-10	2.49E-03	3.48E-08	1.35E-05
6	1.10E-01	5.36E-08	1.93E-10	1.64E-03	2.74E-08	8.92E-06
7	1.61E-02	5.36E-08	1.93E-10	1.64E-03	2.74E-08	8.92E-06
8	2.88E-02	5.36E-08	1.93E-10	1.64E-03	2.74E-08	8.92E-06
9	3.70E-02	5.36E-08	1.93E-10	1.64E-03	2.74E-08	8.92E-06
10	1.19E-02	5.36E-08	1.93E-10	1.64E-03	2.74E-08	8.92E-06
Total	1.43E+00	6.85E-07	2.43E-09	2.06E-02	3.11E-07	1.12E-04

Source: 5

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	8.28E-02	1.09E-07	3.82E-10	3.24E-03	5.12E-08	1.76E-05
2	1.16E-01	1.09E-07	3.82E-10	3.24E-03	5.12E-08	1.76E-05
3	3.54E-01	1.09E-07	3.82E-10	3.24E-03	5.12E-08	1.76E-05
4	1.57E-01	1.09E-07	3.82E-10	3.24E-03	5.12E-08	1.76E-05
5	3.76E-01	1.09E-07	3.82E-10	3.24E-03	5.12E-08	1.76E-05
6	3.76E-01	1.45E-07	5.24E-10	4.44E-03	6.52E-08	2.42E-05
7	3.76E-01	1.45E-07	5.24E-10	4.44E-03	6.52E-08	2.42E-05
8	3.48E-01	1.45E-07	5.24E-10	4.44E-03	6.52E-08	2.42E-05
9	1.10E-01	1.45E-07	5.24E-10	4.44E-03	6.52E-08	2.42E-05
10	1.10E-01	1.45E-07	5.24E-10	4.44E-03	6.52E-08	2.42E-05
Total	2.41E+00	1.27E-06	4.53E-09	3.84E-02	5.82E-07	2.09E-04

Source: 6

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.44E-02	6.72E-08	2.36E-10	2.00E-03	3.17E-08	1.09E-05
2	5.10E-02	6.72E-08	2.36E-10	2.00E-03	3.17E-08	1.09E-05
3	4.18E-02	6.72E-08	2.36E-10	2.00E-03	3.17E-08	1.09E-05
4	1.93E-02	6.72E-08	2.36E-10	2.00E-03	3.17E-08	1.09E-05
5	2.02E-01	6.72E-08	2.36E-10	2.00E-03	3.17E-08	1.09E-05
6	3.20E-02	8.99E-08	3.24E-10	2.75E-03	4.04E-08	1.50E-05
7	5.97E-01	8.99E-08	3.24E-10	2.75E-03	4.04E-08	1.50E-05
8	1.09E-01	8.99E-08	3.24E-10	2.75E-03	4.04E-08	1.50E-05
9	3.21E-02	8.99E-08	3.24E-10	2.75E-03	4.04E-08	1.50E-05
10	6.06E-01	8.99E-08	3.24E-10	2.75E-03	4.04E-08	1.50E-05
Total	1.71E+00	7.85E-07	2.80E-09	2.38E-02	3.60E-07	1.29E-04

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 5.00000 years

Source: 7

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	2.64E-02	1.09E-07	3.82E-10	3.24E-03	5.12E-08	1.76E-05
2	2.97E-02	1.09E-07	3.82E-10	3.24E-03	5.12E-08	1.76E-05
3	5.03E-02	1.09E-07	3.82E-10	3.24E-03	5.12E-08	1.76E-05
4	5.41E-02	1.09E-07	3.82E-10	3.24E-03	5.12E-08	1.76E-05
5	6.77E-02	1.09E-07	3.82E-10	3.24E-03	5.12E-08	1.76E-05
6	1.10E-01	1.45E-07	5.24E-10	4.44E-03	6.52E-08	2.42E-05
7	1.10E-01	1.45E-07	5.24E-10	4.44E-03	6.52E-08	2.42E-05
8	3.53E-01	1.45E-07	5.24E-10	4.44E-03	6.52E-08	2.42E-05
9	3.77E-01	1.45E-07	5.24E-10	4.44E-03	6.52E-08	2.42E-05
10	3.77E-01	1.45E-07	5.24E-10	4.44E-03	6.52E-08	2.42E-05
Total	1.56E+00	1.27E-06	4.53E-09	3.84E-02	5.82E-07	2.09E-04

Source: 8

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	5.11E-02	6.72E-08	2.36E-10	2.00E-03	3.17E-08	1.09E-05
2	1.94E-02	6.72E-08	2.36E-10	2.00E-03	3.17E-08	1.09E-05
3	6.12E-02	6.72E-08	2.36E-10	2.00E-03	3.17E-08	1.09E-05
4	2.02E-01	6.72E-08	2.36E-10	2.00E-03	3.17E-08	1.09E-05
5	2.84E-02	6.72E-08	2.36E-10	2.00E-03	3.17E-08	1.09E-05
6	5.97E-01	8.99E-08	3.24E-10	2.75E-03	4.04E-08	1.50E-05
7	3.20E-02	8.99E-08	3.24E-10	2.75E-03	4.04E-08	1.50E-05
8	1.09E-01	8.99E-08	3.24E-10	2.75E-03	4.04E-08	1.50E-05
9	6.06E-01	8.99E-08	3.24E-10	2.75E-03	4.04E-08	1.50E-05
10	3.21E-02	8.99E-08	3.24E-10	2.75E-03	4.04E-08	1.50E-05
Total	1.74E+00	7.85E-07	2.80E-09	2.38E-02	3.60E-07	1.29E-04

Source: 9

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	3.68E-01	3.47E-07	1.22E-09	1.03E-02	1.45E-07	5.63E-05
2	3.68E-01	3.47E-07	1.22E-09	1.03E-02	1.45E-07	5.63E-05
3	7.31E-01	3.47E-07	1.22E-09	1.03E-02	1.45E-07	5.63E-05
4	3.68E-01	3.47E-07	1.22E-09	1.03E-02	1.45E-07	5.63E-05
5	3.68E-01	3.47E-07	1.22E-09	1.03E-02	1.45E-07	5.63E-05
6	4.10E-01	2.23E-07	8.05E-10	6.82E-03	1.14E-07	3.71E-05
7	2.78E-01	2.23E-07	8.05E-10	6.82E-03	1.14E-07	3.71E-05
8	2.95E-01	2.23E-07	8.05E-10	6.82E-03	1.14E-07	3.71E-05
9	1.52E-01	2.23E-07	8.05E-10	6.82E-03	1.14E-07	3.71E-05
10	1.25E-01	2.23E-07	8.05E-10	6.82E-03	1.14E-07	3.71E-05
Total	3.46E+00	2.85E-06	1.01E-08	8.59E-02	1.29E-06	4.67E-04

** RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:57 Page: 4- 3 : 70 **
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 5.00000 years

Source: 10

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	9.28E-02	1.98E-07	6.98E-10	5.92E-03	9.37E-08	3.22E-05
2	1.15E-01	1.98E-07	6.98E-10	5.92E-03	9.37E-08	3.22E-05
3	2.25E-01	1.98E-07	6.98E-10	5.92E-03	9.37E-08	3.22E-05
4	1.72E-01	1.98E-07	6.98E-10	5.92E-03	9.37E-08	3.22E-05
5	2.53E-01	1.98E-07	6.98E-10	5.92E-03	9.37E-08	3.22E-05
6	3.37E-01	2.66E-07	9.58E-10	8.12E-03	1.19E-07	4.42E-05
7	3.37E-01	2.66E-07	9.58E-10	8.12E-03	1.19E-07	4.42E-05
8	5.50E-01	2.66E-07	9.58E-10	8.12E-03	1.19E-07	4.42E-05
9	3.38E-01	2.66E-07	9.58E-10	8.12E-03	1.19E-07	4.42E-05
10	3.38E-01	2.66E-07	9.58E-10	8.12E-03	1.19E-07	4.42E-05
Total	2.76E+00	2.32E-06	8.28E-09	7.02E-02	1.06E-06	3.82E-04

** RADLD program tpuvers 2.16/1 12 Page 1- 7
 Title : Youngs
 Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 5.00000 years

Nuclide Detail of Doses

[mrem]

Source: 1

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	1.92E-01	1.98E-01	3.02E-01	8.23E-02	8.32E-02	6.48E-02	5.34E-02	4.33E-02	2.69E-02	2.46E-02	1.07E+00
U-234	4.70E-08	4.74E-08	5.50E-08	4.02E-08	4.03E-08	2.70E-08	2.63E-08	2.55E-08	2.45E-08	2.44E-08	3.58E-07
TH-230	2.73E-12	2.75E-12	3.21E-12	2.27E-12	2.28E-12	1.53E-12	1.49E-12	1.44E-12	1.38E-12	1.37E-12	2.04E-11
RA-226	2.82E-12	2.89E-12	4.23E-12	1.37E-12	1.38E-12	1.10E-12	9.44E-13	8.19E-13	6.01E-13	5.68E-13	1.67E-11
PB-210	1.25E-16	1.29E-16	2.15E-16	6.01E-17	6.07E-17	4.46E-17	3.73E-17	2.92E-17	1.83E-17	1.70E-17	7.36E-16
U-235											
U-235	5.05E-02	5.20E-02	7.97E-02	2.11E-02	2.13E-02	1.64E-02	1.35E-02	1.07E-02	6.42E-03	5.83E-03	2.78E-01
PA-231	1.33E-06	1.37E-06	2.03E-06	6.31E-07	6.37E-07	4.81E-07	4.09E-07	3.44E-07	2.40E-07	2.25E-07	7.70E-06
AC-227	1.02E-06	1.05E-06	1.58E-06	4.53E-07	4.57E-07	3.51E-07	2.93E-07	2.41E-07	1.58E-07	1.46E-07	5.74E-06
U-234											
U-234	3.49E-03	3.52E-03	4.09E-03	2.99E-03	2.99E-03	2.00E-03	1.95E-03	1.90E-03	1.82E-03	1.81E-03	2.66E-02
TH-230	4.05E-07	4.09E-07	4.77E-07	3.38E-07	3.38E-07	2.28E-07	2.21E-07	2.14E-07	2.04E-07	2.03E-07	3.04E-06
RA-226	6.28E-07	6.45E-07	9.44E-07	3.06E-07	3.08E-07	2.45E-07	2.11E-07	1.83E-07	1.34E-07	1.27E-07	3.73E-06
PB-210	3.72E-11	3.83E-11	6.37E-11	1.78E-11	1.80E-11	1.32E-11	1.11E-11	8.65E-12	5.44E-12	5.04E-12	2.18E-10

Source: 2

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	1.51E-02	4.42E-01	5.28E-02	1.51E-02	4.42E-01	1.98E-02	1.42E-01	3.41E-02	1.34E-02	3.35E-02	1.21E+00
U-234	1.83E-08	4.67E-08	2.08E-08	1.83E-08	4.67E-08	1.27E-08	2.09E-08	1.37E-08	1.23E-08	1.37E-08	2.24E-07
TH-230	1.02E-12	2.84E-12	1.18E-12	1.02E-12	2.84E-12	7.14E-13	1.24E-12	7.79E-13	6.90E-13	7.80E-13	1.31E-11
RA-226	3.51E-13	5.88E-12	8.43E-13	3.51E-13	5.88E-12	3.83E-13	1.95E-12	5.62E-13	2.96E-13	5.49E-13	1.71E-11
PB-210	1.11E-17	3.01E-16	3.76E-17	1.11E-17	3.01E-16	1.36E-17	9.73E-17	2.49E-17	9.74E-18	2.42E-17	8.31E-16
U-235											
U-235	3.56E-03	1.18E-01	1.35E-02	3.56E-03	1.18E-01	4.88E-03	3.77E-02	8.81E-03	3.27E-03	8.80E-03	3.20E-01
PA-231	1.49E-07	2.87E-06	3.89E-07	1.49E-07	2.87E-06	1.60E-07	9.39E-07	2.53E-07	1.20E-07	2.50E-07	8.15E-06
AC-227	9.35E-08	2.28E-06	2.85E-07	9.35E-08	2.28E-06	1.11E-07	7.36E-07	1.85E-07	7.92E-08	1.83E-07	6.32E-06
U-234											
U-234	1.36E-03	3.46E-03	1.55E-03	1.36E-03	3.46E-03	9.40E-04	1.55E-03	1.02E-03	9.13E-04	1.02E-03	1.66E-02
TH-230	1.52E-07	4.22E-07	1.76E-07	1.52E-07	4.22E-07	1.06E-07	1.84E-07	1.16E-07	1.02E-07	1.16E-07	1.95E-06
RA-226	7.83E-08	1.31E-06	1.88E-07	7.83E-08	1.31E-06	8.54E-08	4.36E-07	1.25E-07	6.61E-08	1.22E-07	3.80E-06
PB-210	3.28E-12	8.93E-11	1.12E-11	3.28E-12	8.93E-11	4.03E-12	2.89E-11	7.40E-12	2.89E-12	7.19E-12	2.47E-10

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 5.00000 years

Source: 3

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	8.27E-02	8.27E-02	3.02E-01	1.95E-01	1.95E-01	5.57E-01	1.94E-01	2.77E-01	1.04E-01	7.83E-02	2.07E+00
U-234	4.02E-08	4.02E-08	5.50E-08	4.72E-08	4.72E-08	5.81E-08	3.53E-08	4.14E-08	2.97E-08	2.80E-08	4.22E-07
TH-230	2.28E-12	2.28E-12	3.21E-12	2.74E-12	2.74E-12	3.58E-12	2.08E-12	2.44E-12	1.71E-12	1.60E-12	2.46E-11
RA-226	1.38E-12	1.38E-12	4.23E-12	2.85E-12	2.85E-12	7.58E-12	2.79E-12	3.84E-12	1.61E-12	1.26E-12	2.98E-11
PB-210	6.04E-17	6.04E-17	2.15E-16	1.27E-16	1.27E-16	3.53E-16	1.25E-16	1.95E-16	7.32E-17	5.56E-17	1.39E-15
U-235											
U-235	2.12E-02	2.12E-02	7.97E-02	5.13E-02	5.13E-02	1.48E-01	5.12E-02	7.30E-02	2.70E-02	2.02E-02	5.44E-01
PA-231	6.34E-07	6.34E-07	2.03E-06	1.35E-06	1.35E-06	3.62E-06	1.31E-06	1.83E-06	7.34E-07	5.68E-07	1.41E-05
AC-227	4.55E-07	4.55E-07	1.58E-06	1.03E-06	1.03E-06	2.87E-06	1.02E-06	1.43E-06	5.53E-07	4.20E-07	1.08E-05
U-234											
U-234	2.99E-03	2.99E-03	4.09E-03	3.51E-03	3.51E-03	4.31E-03	2.62E-03	3.07E-03	2.21E-03	2.08E-03	3.14E-02
TH-230	3.38E-07	3.38E-07	4.77E-07	4.07E-07	4.07E-07	5.31E-07	3.09E-07	3.63E-07	2.53E-07	2.37E-07	3.66E-06
RA-226	3.07E-07	3.07E-07	9.44E-07	6.37E-07	6.37E-07	1.69E-06	6.22E-07	8.56E-07	3.59E-07	2.82E-07	6.64E-06
PB-210	1.79E-11	1.79E-11	6.37E-11	3.77E-11	3.77E-11	1.05E-10	3.71E-11	5.78E-11	2.17E-11	1.65E-11	4.13E-10

Source: 4

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	4.42E-01	1.51E-02	5.28E-02	4.42E-01	1.51E-02	8.75E-02	1.36E-02	2.35E-02	2.98E-02	1.02E-02	1.13E+00
U-234	4.67E-08	1.83E-08	2.08E-08	4.67E-08	1.83E-08	1.76E-08	1.23E-08	1.30E-08	1.36E-08	1.21E-08	2.19E-07
TH-230	2.84E-12	1.02E-12	1.18E-12	2.84E-12	1.02E-12	1.01E-12	6.89E-13	7.32E-13	7.65E-13	6.76E-13	1.28E-11
RA-226	5.88E-12	3.51E-13	8.43E-13	5.88E-12	3.51E-13	1.25E-12	3.02E-13	4.29E-13	5.00E-13	2.55E-13	1.60E-11
PB-210	3.01E-16	1.11E-17	3.76E-17	3.01E-16	1.11E-17	6.42E-17	9.34E-18	1.68E-17	2.29E-17	7.43E-18	7.82E-16
U-235											
U-235	1.18E-01	3.56E-03	1.35E-02	1.18E-01	3.56E-03	2.31E-02	3.26E-03	5.94E-03	7.78E-03	2.41E-03	2.99E-01
PA-231	2.87E-06	1.49E-07	3.89E-07	2.87E-06	1.49E-07	5.94E-07	1.21E-07	1.85E-07	2.26E-07	9.99E-08	7.65E-06
AC-227	2.28E-06	9.35E-08	2.85E-07	2.28E-06	9.35E-08	4.57E-07	7.98E-08	1.31E-07	1.64E-07	6.28E-08	5.92E-06
U-234											
U-234	3.46E-03	1.36E-03	1.55E-03	3.46E-03	1.36E-03	1.30E-03	9.11E-04	9.63E-04	1.01E-03	8.97E-04	1.63E-02
TH-230	4.22E-07	1.52E-07	1.76E-07	4.22E-07	1.52E-07	1.50E-07	1.02E-07	1.09E-07	1.14E-07	1.00E-07	1.90E-06
RA-226	1.31E-06	7.83E-08	1.88E-07	1.31E-06	7.83E-08	2.78E-07	6.74E-08	9.56E-08	1.11E-07	5.68E-08	3.58E-06
PB-210	8.93E-11	3.28E-12	1.12E-11	8.93E-11	3.28E-12	1.90E-11	2.77E-12	4.98E-12	6.80E-12	2.20E-12	2.32E-10

** RADLD program tpuvers 2.6/1 12 Page 1- 4 7
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 5.00000 years

Source: 5

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	6.68E-02	9.32E-02	2.80E-01	1.25E-01	2.98E-01	2.98E-01	2.98E-01	2.76E-01	8.91E-02	8.91E-02	1.91E+00
U-234	2.70E-08	2.87E-08	4.14E-08	3.06E-08	4.15E-08	5.00E-08	5.00E-08	4.95E-08	3.69E-08	3.69E-08	3.93E-07
TH-230	1.53E-12	1.64E-12	2.44E-12	1.77E-12	2.49E-12	2.96E-12	2.96E-12	2.89E-12	2.09E-12	2.09E-12	2.29E-11
RA-226	1.09E-12	1.44E-12	3.87E-12	1.85E-12	4.14E-12	4.20E-12	4.20E-12	3.87E-12	1.45E-12	1.45E-12	2.76E-11
PB-210	4.81E-17	6.59E-17	1.98E-16	8.16E-17	1.90E-16	1.92E-16	1.92E-16	1.96E-16	6.40E-17	6.40E-17	1.29E-15
U-235											
U-235	1.72E-02	2.41E-02	7.40E-02	3.28E-02	7.87E-02	7.87E-02	7.87E-02	7.28E-02	2.29E-02	2.29E-02	5.03E-01
PA-231	4.95E-07	6.62E-07	1.85E-06	8.65E-07	1.96E-06	1.99E-06	1.99E-06	1.85E-06	6.62E-07	6.62E-07	1.30E-05
AC-227	3.62E-07	4.96E-07	1.45E-06	6.60E-07	1.54E-06	1.56E-06	1.56E-06	1.44E-06	4.83E-07	4.83E-07	1.00E-05
U-234											
U-234	2.01E-03	2.13E-03	3.07E-03	2.27E-03	3.08E-03	3.71E-03	3.71E-03	3.68E-03	2.74E-03	2.74E-03	2.92E-02
TH-230	2.28E-07	2.44E-07	3.63E-07	2.64E-07	3.70E-07	4.40E-07	4.40E-07	4.30E-07	3.11E-07	3.11E-07	3.40E-06
RA-226	2.44E-07	3.22E-07	8.62E-07	4.14E-07	9.22E-07	9.36E-07	9.36E-07	8.63E-07	3.22E-07	3.22E-07	6.14E-06
PB-210	1.43E-11	1.95E-11	5.86E-11	2.42E-11	5.65E-11	5.69E-11	5.69E-11	5.81E-11	1.90E-11	1.90E-11	3.83E-10

Source: 6

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	1.24E-02	4.10E-02	3.40E-02	1.63E-02	1.60E-01	2.67E-02	4.71E-01	8.69E-02	2.67E-02	4.78E-01	1.35E+00
U-234	1.48E-08	1.68E-08	1.62E-08	1.50E-08	2.45E-08	2.09E-08	5.00E-08	2.50E-08	2.09E-08	5.05E-08	2.54E-07
TH-230	8.26E-13	9.52E-13	9.18E-13	8.40E-13	1.45E-12	1.17E-12	3.06E-12	1.43E-12	1.17E-12	3.09E-12	1.49E-11
RA-226	3.03E-13	6.66E-13	5.82E-13	3.57E-13	2.22E-12	5.29E-13	6.31E-12	1.31E-12	5.30E-13	6.40E-12	1.92E-11
PB-210	9.02E-18	2.92E-17	2.45E-17	1.12E-17	1.08E-16	1.89E-17	3.15E-16	6.20E-17	1.89E-17	3.20E-16	9.17E-16
U-235											
U-235	2.92E-03	1.08E-02	8.66E-03	3.89E-03	4.25E-02	6.54E-03	1.25E-01	2.26E-02	6.55E-03	1.27E-01	3.57E-01
PA-231	1.22E-07	3.06E-07	2.59E-07	1.46E-07	1.06E-06	2.28E-07	3.06E-06	6.12E-07	2.28E-07	3.11E-06	9.13E-06
AC-227	7.64E-08	2.24E-07	1.86E-07	9.56E-08	8.33E-07	1.54E-07	2.43E-06	4.61E-07	1.54E-07	2.47E-06	7.08E-06
U-234											
U-234	1.10E-03	1.24E-03	1.20E-03	1.11E-03	1.82E-03	1.55E-03	3.71E-03	1.85E-03	1.55E-03	3.75E-03	1.89E-02
TH-230	1.23E-07	1.41E-07	1.36E-07	1.25E-07	2.16E-07	1.74E-07	4.54E-07	2.12E-07	1.74E-07	4.59E-07	2.21E-06
RA-226	6.75E-08	1.48E-07	1.30E-07	7.95E-08	4.95E-07	1.18E-07	1.41E-06	2.92E-07	1.18E-07	1.43E-06	4.28E-06
PB-210	2.68E-12	8.66E-12	7.26E-12	3.32E-12	3.21E-11	5.60E-12	9.35E-11	1.84E-11	5.60E-12	9.50E-11	2.72E-10

** RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:57 Page: 4- 4 : 74 **

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 5.00000 years

Source: 7

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	2.25E-02	2.52E-02	4.14E-02	4.43E-02	5.51E-02	8.91E-02	8.91E-02	2.80E-01	2.99E-01	2.99E-01	1.24E+00
U-234	2.40E-08	2.41E-08	2.51E-08	2.54E-08	2.61E-08	3.69E-08	3.69E-08	4.98E-08	5.00E-08	5.00E-08	3.48E-07
TH-230	1.34E-12	1.35E-12	1.42E-12	1.44E-12	1.48E-12	2.09E-12	2.09E-12	2.91E-12	2.96E-12	2.96E-12	2.01E-11
RA-226	5.24E-13	5.62E-13	7.79E-13	8.07E-13	9.53E-13	1.45E-12	1.45E-12	3.93E-12	4.20E-12	4.20E-12	1.89E-11
PB-210	1.58E-17	1.73E-17	2.79E-17	3.13E-17	3.82E-17	6.40E-17	6.40E-17	1.99E-16	1.92E-16	1.92E-16	8.42E-16
U-235											
U-235	5.32E-03	5.99E-03	1.02E-02	1.11E-02	1.39E-02	2.29E-02	2.29E-02	7.39E-02	7.88E-02	7.88E-02	3.24E-01
PA-231	2.11E-07	2.28E-07	3.31E-07	3.50E-07	4.19E-07	6.62E-07	6.62E-07	1.88E-06	2.00E-06	2.00E-06	8.74E-06
AC-227	1.36E-07	1.49E-07	2.31E-07	2.47E-07	3.01E-07	4.84E-07	4.84E-07	1.46E-06	1.56E-06	1.56E-06	6.60E-06
U-234											
U-234	1.78E-03	1.79E-03	1.87E-03	1.89E-03	1.94E-03	2.74E-03	2.74E-03	3.70E-03	3.71E-03	3.71E-03	2.59E-02
TH-230	1.99E-07	2.01E-07	2.11E-07	2.13E-07	2.20E-07	3.11E-07	3.11E-07	4.33E-07	4.40E-07	4.40E-07	2.98E-06
RA-226	1.17E-07	1.25E-07	1.74E-07	1.80E-07	2.13E-07	3.23E-07	3.23E-07	8.76E-07	9.37E-07	9.37E-07	4.20E-06
PB-210	4.69E-12	5.14E-12	8.29E-12	9.29E-12	1.13E-11	1.90E-11	1.90E-11	5.90E-11	5.70E-11	5.70E-11	2.50E-10

Source: 8

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	4.11E-02	1.63E-02	4.91E-02	1.59E-01	2.35E-02	4.71E-01	2.67E-02	8.69E-02	4.78E-01	2.67E-02	1.38E+00
U-234	1.68E-08	1.50E-08	1.74E-08	2.45E-08	1.54E-08	5.00E-08	2.09E-08	2.50E-08	5.05E-08	2.09E-08	2.56E-07
TH-230	9.53E-13	8.43E-13	9.87E-13	1.45E-12	8.70E-13	3.06E-12	1.17E-12	1.43E-12	3.09E-12	1.17E-12	1.50E-11
RA-226	6.66E-13	3.53E-13	7.73E-13	2.21E-12	4.51E-13	6.31E-12	5.29E-13	1.31E-12	6.40E-12	5.30E-13	1.95E-11
PB-210	2.93E-17	1.18E-17	3.62E-17	1.08E-16	1.62E-17	3.15E-16	1.89E-17	6.20E-17	3.20E-16	1.89E-17	9.37E-16
U-235											
U-235	1.08E-02	3.97E-03	1.28E-02	4.24E-02	5.79E-03	1.25E-01	6.54E-03	2.26E-02	1.27E-01	6.55E-03	3.64E-01
PA-231	3.06E-07	1.46E-07	3.56E-07	1.06E-06	1.91E-07	3.06E-06	2.28E-07	6.12E-07	3.11E-06	2.28E-07	9.30E-06
AC-227	2.24E-07	9.63E-08	2.64E-07	8.29E-07	1.32E-07	2.43E-06	1.54E-07	4.61E-07	2.47E-06	1.54E-07	7.21E-06
U-234											
U-234	1.24E-03	1.12E-03	1.29E-03	1.82E-03	1.15E-03	3.71E-03	1.55E-03	1.85E-03	3.75E-03	1.55E-03	1.90E-02
TH-230	1.41E-07	1.25E-07	1.47E-07	2.16E-07	1.29E-07	4.54E-07	1.74E-07	2.12E-07	4.59E-07	1.74E-07	2.23E-06
RA-226	1.48E-07	7.88E-08	1.72E-07	4.92E-07	1.01E-07	1.41E-06	1.18E-07	2.92E-07	1.43E-06	1.18E-07	4.36E-06
PB-210	8.70E-12	3.51E-12	1.08E-11	3.21E-11	4.80E-12	9.35E-11	5.60E-12	1.84E-11	9.50E-11	5.60E-12	2.78E-10

** RAD TLD program tpu vers 2.1 6/1 12 Page 1- 7
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 5.00000 years

Source: 9

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238	2.95E-01	2.95E-01	5.81E-01	2.95E-01	2.95E-01	3.27E-01	2.22E-01	2.36E-01	1.23E-01	1.02E-01	2.77E+00
U-234	9.13E-08	9.13E-08	1.09E-07	9.13E-08	9.13E-08	6.86E-08	6.20E-08	6.28E-08	5.57E-08	5.44E-08	7.78E-07
TH-230	5.24E-12	5.24E-12	6.43E-12	5.24E-12	5.24E-12	4.00E-12	3.57E-12	3.63E-12	3.16E-12	3.07E-12	4.48E-11
RA-226	4.48E-12	4.48E-12	8.26E-12	4.48E-12	4.48E-12	4.78E-12	3.40E-12	3.58E-12	2.09E-12	1.81E-12	4.18E-11
PB-210	2.03E-16	2.03E-16	3.90E-16	2.03E-16	2.03E-16	2.20E-16	1.52E-16	1.61E-16	8.68E-17	7.30E-17	1.89E-15
U-235											
U-235	7.68E-02	7.68E-02	1.52E-01	7.68E-02	7.68E-02	8.56E-02	5.80E-02	6.15E-02	3.17E-02	2.62E-02	7.22E-01
PA-231	2.10E-06	2.10E-06	3.92E-06	2.10E-06	2.10E-06	2.22E-06	1.56E-06	1.65E-06	9.29E-07	7.95E-07	1.95E-05
AC-227	1.57E-06	1.57E-06	3.03E-06	1.57E-06	1.57E-06	1.71E-06	1.18E-06	1.25E-06	6.73E-07	5.66E-07	1.47E-05
U-234											
U-234	6.78E-03	6.78E-03	8.13E-03	6.78E-03	6.78E-03	5.09E-03	4.60E-03	4.67E-03	4.14E-03	4.04E-03	5.78E-02
TH-230	7.79E-07	7.79E-07	9.55E-07	7.79E-07	7.79E-07	5.95E-07	5.30E-07	5.39E-07	4.69E-07	4.56E-07	6.66E-06
RA-226	9.98E-07	9.98E-07	1.84E-06	9.98E-07	9.98E-07	1.07E-06	7.59E-07	7.98E-07	4.66E-07	4.04E-07	9.33E-06
PB-210	6.02E-11	6.02E-11	1.16E-10	6.02E-11	6.02E-11	6.53E-11	4.51E-11	4.77E-11	2.58E-11	2.17E-11	5.62E-10

Source: 10

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	7.59E-02	9.30E-02	1.80E-01	1.38E-01	2.02E-01	2.69E-01	2.69E-01	4.38E-01	2.70E-01	2.70E-01	2.21E+00
U-234	4.64E-08	4.75E-08	5.31E-08	5.04E-08	5.45E-08	7.43E-08	7.43E-08	8.51E-08	7.44E-08	7.44E-08	6.34E-07
TH-230	2.62E-12	2.69E-12	3.05E-12	2.88E-12	3.14E-12	4.28E-12	4.28E-12	4.98E-12	4.28E-12	4.28E-12	3.65E-11
RA-226	1.38E-12	1.61E-12	2.76E-12	2.20E-12	3.04E-12	4.04E-12	4.04E-12	6.25E-12	4.05E-12	4.05E-12	3.34E-11
PB-210	5.63E-17	6.77E-17	1.26E-16	9.78E-17	1.40E-16	1.88E-16	1.88E-16	3.00E-16	1.88E-16	1.88E-16	1.54E-15
U-235											
U-235	1.94E-02	2.40E-02	4.69E-02	3.59E-02	5.27E-02	7.03E-02	7.03E-02	1.15E-01	7.06E-02	7.06E-02	5.75E-01
PA-231	6.12E-07	7.21E-07	1.27E-06	1.01E-06	1.41E-06	1.89E-06	1.89E-06	2.96E-06	1.90E-06	1.90E-06	1.56E-05
AC-227	4.28E-07	5.15E-07	9.58E-07	7.45E-07	1.07E-06	1.43E-06	1.43E-06	2.29E-06	1.43E-06	1.43E-06	1.17E-05
U-234											
U-234	3.45E-03	3.53E-03	3.94E-03	3.74E-03	4.05E-03	5.52E-03	5.52E-03	6.32E-03	5.52E-03	5.52E-03	4.71E-02
TH-230	3.89E-07	3.99E-07	4.53E-07	4.27E-07	4.66E-07	6.35E-07	6.35E-07	7.39E-07	6.36E-07	6.36E-07	5.42E-06
RA-226	3.09E-07	3.59E-07	6.15E-07	4.91E-07	6.79E-07	9.00E-07	9.00E-07	1.39E-06	9.03E-07	9.03E-07	7.45E-06
PB-210	1.67E-11	2.01E-11	3.73E-11	2.90E-11	4.17E-11	5.57E-11	5.57E-11	8.90E-11	5.59E-11	5.59E-11	4.57E-10

** RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:58 Page: 5- 1 : 76 **
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 20.0000 years

Assessment for Time: 5
Time =2.00E+01 yr ✓

Source Information

Source: 1

Location:: Room : 1 x: 18.20 y: 0.00 z: 4.40 [m]
Geometry:: Type: Area Area:3.22E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
U-238 2.148E+06
U-235 9.990E+04
U-234 2.258E+06
PA-231 4.224E+01
TH-230 4.067E+02
AC-227 1.103E+01
RA-226 1.758E+00
PB-210 3.144E-01

** RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:56 Page: 5- 1 7
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 20.0000 years

Source: 2

Location:: Room : 1 x: 0.00 y: 9.15 z: 4.40 [m]
Geometry:: Type: Area Area:1.61E+02 [m2] Direction: x
Pathway ::
Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-02
Removable fraction: 1.000E-03
Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
[pCi/m2]
U-238 2.148E+06
U-235 9.990E+04
U-234 2.258E+06
PA-231 4.224E+01
TH-230 4.067E+02
AC-227 1.103E+01
RA-226 1.758E+00
PB-210 3.144E-01

Source: 3

Location:: Room : 1 x: 18.30 y: 18.30 z: 4.40 [m]
Geometry:: Type: Area Area:3.22E+02 [m2] Direction: y
Pathway ::
Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-02
Removable fraction: 1.000E-03
Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
[pCi/m2]
U-238 2.148E+06
U-235 9.990E+04
U-234 2.258E+06
PA-231 4.224E+01
TH-230 4.067E+02
AC-227 1.103E+01
RA-226 1.758E+00
PB-210 3.144E-01

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 20.0000 years

Source: 4

Location:: Room : 1 x: 36.60 y: 9.15 z: 4.40 [m]
Geometry:: Type: Area Area:1.61E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
U-238 2.148E+06
U-235 9.990E+04
U-234 2.258E+06
PA-231 4.224E+01
TH-230 4.067E+02
AC-227 1.103E+01
RA-226 1.758E+00
PB-210 3.144E-01

Source: 5

Location:: Room : 2 x: 15.25 y: 18.30 z: 5.20 [m]
Geometry:: Type: Area Area:3.15E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
U-238 2.148E+06
U-235 9.990E+04
U-234 2.258E+06
PA-231 4.224E+01
TH-230 4.067E+02
AC-227 1.103E+01
RA-226 1.758E+00
PB-210 3.144E-01

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 20.0000 years

Source: 6

Location:: Room : 2 x: 0.00 y: 27.80 z: 5.18 [m]
Geometry:: Type: Area Area:1.95E+02 [m2] Direction: x
Pathway ::
Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-02
Removable fraction: 1.000E-03
Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.148E+06
	U-235	9.990E+04
	U-234	2.258E+06
	PA-231	4.224E+01
	TH-230	4.067E+02
	AC-227	1.103E+01
	RA-226	1.758E+00
	PB-210	3.144E-01

Source: 7

Location:: Room : 2 x: 15.25 y: 37.20 z: 5.18 [m]
Geometry:: Type: Area Area:3.15E+02 [m2] Direction: y
Pathway ::
Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-02
Removable fraction: 1.000E-03
Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.148E+06
	U-235	9.990E+04
	U-234	2.258E+06
	PA-231	4.224E+01
	TH-230	4.067E+02
	AC-227	1.103E+01
	RA-226	1.758E+00
	PB-210	3.144E-01

** RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:58 Page: 5- 1 : 80 **
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 20.0000 years

Source: 8

Location:: Room : 2 x: 30.50 y: 27.80 z: 5.18 [m]
Geometry:: Type: Area Area:1.95E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.148E+06
 U-235 9.990E+04
 U-234 2.258E+06
 PA-231 4.224E+01
 TH-230 4.067E+02
 AC-227 1.103E+01
 RA-226 1.758E+00
 PB-210 3.144E-01

Source: 9

Location:: Room : 1 x: 18.30 y: 9.15 z: 8.80 [m]
Geometry:: Type: Area Area:6.70E+02 [m2] Direction: z
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.148E+06
 U-235 9.990E+04
 U-234 2.258E+06
 PA-231 4.224E+01
 TH-230 4.067E+02
 AC-227 1.103E+01
 RA-226 1.758E+00
 PB-210 3.144E-01

** RADFIELD program version 2.1 6/1 12 Page 5- 8
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 20.0000 years

Source: 10

Location:: Room : 2 x: 15.25 y: 27.80 z: 10.36 [m]
Geometry:: Type: Area Area: 5.76E+02 [m²] Direction: z
Pathway ::
 Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-02
 Removable fraction: 1.000E-03
 Time to Remove: 7.300E+03 [day]

Contamination::	Nuclide	Concentration [pCi/m ²]
	U-238	2.148E+06
	U-235	9.990E+04
	U-234	2.258E+06
	PA-231	4.224E+01
	TH-230	4.067E+02
	AC-227	1.103E+01
	RA-226	1.758E+00
	PB-210	3.144E-01

** RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:58 Page: 5- 2 : 82 **

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 20.0000 years

RESRAD-BUILD Dose Tables

Receptor Point-Source Doses

[mrem]

	Source 1	Source 2	Source 3	Source 4	Source 5	Source 6	Source 7	Source 8	Source 9	Source 10	Total
Receptor 1	2.4E-01	1.8E-02	1.0E-01	5.6E-01	8.3E-02	1.4E-02	2.6E-02	5.1E-02	3.7E-01	9.3E-02	1.6E+00
Receptor 2	2.5E-01	5.6E-01	1.0E-01	1.8E-02	1.2E-01	5.1E-02	3.0E-02	1.9E-02	3.7E-01	1.1E-01	1.6E+00
Receptor 3	3.8E-01	6.5E-02	3.8E-01	6.5E-02	3.5E-01	4.2E-02	5.0E-02	6.1E-02	7.3E-01	2.2E-01	2.4E+00
Receptor 4	1.0E-01	1.8E-02	2.4E-01	5.6E-01	1.6E-01	1.9E-02	5.4E-02	2.0E-01	3.7E-01	1.7E-01	1.9E+00
Receptor 5	1.0E-01	5.6E-01	2.4E-01	1.8E-02	3.8E-01	2.0E-01	6.8E-02	2.8E-02	3.7E-01	2.5E-01	2.2E+00
Receptor 6	8.0E-02	2.4E-02	7.1E-01	1.1E-01	3.8E-01	3.2E-02	1.1E-01	6.0E-01	4.1E-01	3.4E-01	2.8E+00
Receptor 7	6.6E-02	1.8E-01	2.4E-01	1.6E-02	3.8E-01	6.0E-01	1.1E-01	3.2E-02	2.8E-01	3.4E-01	2.2E+00
Receptor 8	5.3E-02	4.2E-02	3.5E-01	2.9E-02	3.5E-01	1.1E-01	3.5E-01	1.1E-01	2.9E-01	5.5E-01	2.2E+00
Receptor 9	3.2E-02	1.6E-02	1.3E-01	3.7E-02	1.1E-01	3.2E-02	3.8E-01	6.1E-01	1.5E-01	3.4E-01	1.8E+00
Receptor 10	2.9E-02	4.2E-02	9.7E-02	1.2E-02	1.1E-01	6.1E-01	3.8E-01	3.2E-02	1.2E-01	3.4E-01	1.8E+00
Total	1.3E+00	1.5E+00	2.6E+00	1.4E+00	2.4E+00	1.7E+00	1.6E+00	1.7E+00	3.5E+00	2.8E+01	2.0E+01

** RAD-BLD Program Output, Version 2.10 05/11/97 12:00 Page: 8- 3... 83
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 20.0000 years

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	2.41E-01	0.00E+00	0.00E+00	0.00E+00	1.11E-06	0.00E+00
2	2.48E-01	0.00E+00	0.00E+00	0.00E+00	1.11E-06	0.00E+00
3	3.81E-01	0.00E+00	0.00E+00	0.00E+00	1.11E-06	0.00E+00
4	1.01E-01	0.00E+00	0.00E+00	0.00E+00	1.11E-06	0.00E+00
5	1.02E-01	0.00E+00	0.00E+00	0.00E+00	1.11E-06	0.00E+00
6	7.99E-02	0.00E+00	0.00E+00	0.00E+00	8.73E-07	0.00E+00
7	6.55E-02	0.00E+00	0.00E+00	0.00E+00	8.73E-07	0.00E+00
8	5.26E-02	0.00E+00	0.00E+00	0.00E+00	8.73E-07	0.00E+00
9	3.19E-02	0.00E+00	0.00E+00	0.00E+00	8.73E-07	0.00E+00
10	2.89E-02	0.00E+00	0.00E+00	0.00E+00	8.73E-07	0.00E+00
Total	1.33E+00	0.00E+00	0.00E+00	0.00E+00	9.91E-06	0.00E+00

Source: 2

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.75E-02	0.00E+00	0.00E+00	0.00E+00	5.54E-07	0.00E+00
2	5.60E-01	0.00E+00	0.00E+00	0.00E+00	5.54E-07	0.00E+00
3	6.54E-02	0.00E+00	0.00E+00	0.00E+00	5.54E-07	0.00E+00
4	1.75E-02	0.00E+00	0.00E+00	0.00E+00	5.54E-07	0.00E+00
5	5.60E-01	0.00E+00	0.00E+00	0.00E+00	5.54E-07	0.00E+00
6	2.39E-02	0.00E+00	0.00E+00	0.00E+00	4.36E-07	0.00E+00
7	1.79E-01	0.00E+00	0.00E+00	0.00E+00	4.36E-07	0.00E+00
8	4.23E-02	0.00E+00	0.00E+00	0.00E+00	4.36E-07	0.00E+00
9	1.59E-02	0.00E+00	0.00E+00	0.00E+00	4.36E-07	0.00E+00
10	4.17E-02	0.00E+00	0.00E+00	0.00E+00	4.36E-07	0.00E+00
Total	1.52E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-06	0.00E+00

Source: 3

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.02E-01	0.00E+00	0.00E+00	0.00E+00	1.11E-06	0.00E+00
2	1.02E-01	0.00E+00	0.00E+00	0.00E+00	1.11E-06	0.00E+00
3	3.81E-01	0.00E+00	0.00E+00	0.00E+00	1.11E-06	0.00E+00
4	2.45E-01	0.00E+00	0.00E+00	0.00E+00	1.11E-06	0.00E+00
5	2.45E-01	0.00E+00	0.00E+00	0.00E+00	1.11E-06	0.00E+00
6	7.05E-01	0.00E+00	0.00E+00	0.00E+00	8.73E-07	0.00E+00
7	2.45E-01	0.00E+00	0.00E+00	0.00E+00	8.73E-07	0.00E+00
8	3.49E-01	0.00E+00	0.00E+00	0.00E+00	8.73E-07	0.00E+00
9	1.30E-01	0.00E+00	0.00E+00	0.00E+00	8.73E-07	0.00E+00
10	9.72E-02	0.00E+00	0.00E+00	0.00E+00	8.73E-07	0.00E+00
Total	2.60E+00	0.00E+00	0.00E+00	0.00E+00	9.91E-06	0.00E+00

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 20.0000 years

Source: 4

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	5.60E-01	0.00E+00	0.00E+00	0.00E+00	5.54E-07	0.00E+00
2	1.75E-02	0.00E+00	0.00E+00	0.00E+00	5.54E-07	0.00E+00
3	6.54E-02	0.00E+00	0.00E+00	0.00E+00	5.54E-07	0.00E+00
4	5.60E-01	0.00E+00	0.00E+00	0.00E+00	5.54E-07	0.00E+00
5	1.75E-02	0.00E+00	0.00E+00	0.00E+00	5.54E-07	0.00E+00
6	1.10E-01	0.00E+00	0.00E+00	0.00E+00	4.36E-07	0.00E+00
7	1.61E-02	0.00E+00	0.00E+00	0.00E+00	4.36E-07	0.00E+00
8	2.88E-02	0.00E+00	0.00E+00	0.00E+00	4.36E-07	0.00E+00
9	3.70E-02	0.00E+00	0.00E+00	0.00E+00	4.36E-07	0.00E+00
10	1.19E-02	0.00E+00	0.00E+00	0.00E+00	4.36E-07	0.00E+00
Total	1.42E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-06	0.00E+00

Source: 5

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	8.27E-02	0.00E+00	0.00E+00	0.00E+00	8.17E-07	0.00E+00
2	1.16E-01	0.00E+00	0.00E+00	0.00E+00	8.17E-07	0.00E+00
3	3.54E-01	0.00E+00	0.00E+00	0.00E+00	8.17E-07	0.00E+00
4	1.56E-01	0.00E+00	0.00E+00	0.00E+00	8.17E-07	0.00E+00
5	3.76E-01	0.00E+00	0.00E+00	0.00E+00	8.17E-07	0.00E+00
6	3.76E-01	0.00E+00	0.00E+00	0.00E+00	1.04E-06	0.00E+00
7	3.76E-01	0.00E+00	0.00E+00	0.00E+00	1.04E-06	0.00E+00
8	3.48E-01	0.00E+00	0.00E+00	0.00E+00	1.04E-06	0.00E+00
9	1.10E-01	0.00E+00	0.00E+00	0.00E+00	1.04E-06	0.00E+00
10	1.10E-01	0.00E+00	0.00E+00	0.00E+00	1.04E-06	0.00E+00
Total	2.40E+00	0.00E+00	0.00E+00	0.00E+00	9.29E-06	0.00E+00

Source: 6

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.44E-02	0.00E+00	0.00E+00	0.00E+00	5.06E-07	0.00E+00
2	5.10E-02	0.00E+00	0.00E+00	0.00E+00	5.06E-07	0.00E+00
3	4.18E-02	0.00E+00	0.00E+00	0.00E+00	5.06E-07	0.00E+00
4	1.93E-02	0.00E+00	0.00E+00	0.00E+00	5.06E-07	0.00E+00
5	2.02E-01	0.00E+00	0.00E+00	0.00E+00	5.06E-07	0.00E+00
6	3.20E-02	0.00E+00	0.00E+00	0.00E+00	6.44E-07	0.00E+00
7	5.97E-01	0.00E+00	0.00E+00	0.00E+00	6.44E-07	0.00E+00
8	1.08E-01	0.00E+00	0.00E+00	0.00E+00	6.44E-07	0.00E+00
9	3.21E-02	0.00E+00	0.00E+00	0.00E+00	6.44E-07	0.00E+00
10	6.06E-01	0.00E+00	0.00E+00	0.00E+00	6.44E-07	0.00E+00
Total	1.70E+00	0.00E+00	0.00E+00	0.00E+00	5.75E-06	0.00E+00

** RADLD program tpu vers 2.1 5/1 12:15:38-3 8
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IE

Source: 7

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	2.63E-02	0.00E+00	0.00E+00	0.00E+00	8.17E-07	0.00E+00
2	2.97E-02	0.00E+00	0.00E+00	0.00E+00	8.17E-07	0.00E+00
3	5.02E-02	0.00E+00	0.00E+00	0.00E+00	8.17E-07	0.00E+00
4	5.40E-02	0.00E+00	0.00E+00	0.00E+00	8.17E-07	0.00E+00
5	6.77E-02	0.00E+00	0.00E+00	0.00E+00	8.17E-07	0.00E+00
6	1.10E-01	0.00E+00	0.00E+00	0.00E+00	1.04E-06	0.00E+00
7	1.10E-01	0.00E+00	0.00E+00	0.00E+00	1.04E-06	0.00E+00
8	3.53E-01	0.00E+00	0.00E+00	0.00E+00	1.04E-06	0.00E+00
9	3.76E-01	0.00E+00	0.00E+00	0.00E+00	1.04E-06	0.00E+00
10	3.76E-01	0.00E+00	0.00E+00	0.00E+00	1.04E-06	0.00E+00
Total	1.55E+00	0.00E+00	0.00E+00	0.00E+00	9.29E-06	0.00E+00

Source: 8

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	5.10E-02	0.00E+00	0.00E+00	0.00E+00	5.06E-07	0.00E+00
2	1.94E-02	0.00E+00	0.00E+00	0.00E+00	5.06E-07	0.00E+00
3	6.11E-02	0.00E+00	0.00E+00	0.00E+00	5.06E-07	0.00E+00
4	2.01E-01	0.00E+00	0.00E+00	0.00E+00	5.06E-07	0.00E+00
5	2.84E-02	0.00E+00	0.00E+00	0.00E+00	5.06E-07	0.00E+00
6	5.97E-01	0.00E+00	0.00E+00	0.00E+00	6.44E-07	0.00E+00
7	3.20E-02	0.00E+00	0.00E+00	0.00E+00	6.44E-07	0.00E+00
8	1.08E-01	0.00E+00	0.00E+00	0.00E+00	6.44E-07	0.00E+00
9	6.06E-01	0.00E+00	0.00E+00	0.00E+00	6.44E-07	0.00E+00
10	3.21E-02	0.00E+00	0.00E+00	0.00E+00	6.44E-07	0.00E+00
Total	1.74E+00	0.00E+00	0.00E+00	0.00E+00	5.75E-06	0.00E+00

Source: 9

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	3.68E-01	0.00E+00	0.00E+00	0.00E+00	2.31E-06	0.00E+00
2	3.68E-01	0.00E+00	0.00E+00	0.00E+00	2.31E-06	0.00E+00
3	7.31E-01	0.00E+00	0.00E+00	0.00E+00	2.31E-06	0.00E+00
4	3.68E-01	0.00E+00	0.00E+00	0.00E+00	2.31E-06	0.00E+00
5	3.68E-01	0.00E+00	0.00E+00	0.00E+00	2.31E-06	0.00E+00
6	4.10E-01	0.00E+00	0.00E+00	0.00E+00	1.82E-06	0.00E+00
7	2.78E-01	0.00E+00	0.00E+00	0.00E+00	1.82E-06	0.00E+00
8	2.95E-01	0.00E+00	0.00E+00	0.00E+00	1.82E-06	0.00E+00
9	1.52E-01	0.00E+00	0.00E+00	0.00E+00	1.82E-06	0.00E+00
10	1.25E-01	0.00E+00	0.00E+00	0.00E+00	1.82E-06	0.00E+00
Total	3.46E+00	0.00E+00	0.00E+00	0.00E+00	2.06E-05	0.00E+00

** RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:58 Page: 5- 3 : 86 **

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 20.0000 years

Source: 10

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	9.27E-02	0.00E+00	0.00E+00	0.00E+00	1.49E-06	0.00E+00
2	1.14E-01	0.00E+00	0.00E+00	0.00E+00	1.49E-06	0.00E+00
3	2.25E-01	0.00E+00	0.00E+00	0.00E+00	1.49E-06	0.00E+00
4	1.72E-01	0.00E+00	0.00E+00	0.00E+00	1.49E-06	0.00E+00
5	2.52E-01	0.00E+00	0.00E+00	0.00E+00	1.49E-06	0.00E+00
6	3.37E-01	0.00E+00	0.00E+00	0.00E+00	1.90E-06	0.00E+00
7	3.37E-01	0.00E+00	0.00E+00	0.00E+00	1.90E-06	0.00E+00
8	5.50E-01	0.00E+00	0.00E+00	0.00E+00	1.90E-06	0.00E+00
9	3.38E-01	0.00E+00	0.00E+00	0.00E+00	1.90E-06	0.00E+00
10	3.38E-01	0.00E+00	0.00E+00	0.00E+00	1.90E-06	0.00E+00
Total	2.76E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-05	0.00E+00

max Rn - 222

** RADILD [redacted] tpu [redacted] vers 2.1 6/1 12 Page 5- 8
 Title : Youngs
 Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 20.0000 years

Nuclide Detail of Doses

[mrem]

Source: 1

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	1.90E-01	1.95E-01	3.00E-01	7.99E-02	8.08E-02	6.32E-02	5.19E-02	4.18E-02	2.54E-02	2.30E-02	1.05E+00
U-234	4.78E-08	4.92E-08	7.97E-08	2.05E-08	2.07E-08	1.54E-08	1.26E-08	9.57E-09	5.50E-09	4.99E-09	2.66E-07
TH-230	1.26E-11	1.29E-11	2.03E-11	5.29E-12	5.35E-12	4.05E-12	3.33E-12	2.58E-12	1.51E-12	1.37E-12	6.93E-11
RA-226	1.80E-10	1.85E-10	2.70E-10	8.76E-11	8.83E-11	7.01E-11	6.04E-11	5.24E-11	3.84E-11	3.63E-11	1.07E-09
PB-210	2.80E-14	2.89E-14	4.90E-14	1.27E-14	1.28E-14	9.52E-15	7.81E-15	5.89E-15	3.34E-15	3.03E-15	1.61E-13
U-235											
U-235	5.04E-02	5.19E-02	7.96E-02	2.10E-02	2.12E-02	1.64E-02	1.34E-02	1.06E-02	6.35E-03	5.75E-03	2.76E-01
PA-231	4.83E-06	4.97E-06	7.63E-06	2.03E-06	2.05E-06	1.59E-06	1.31E-06	1.05E-06	6.32E-07	5.73E-07	2.67E-05
AC-227	1.34E-05	1.38E-05	2.10E-05	5.58E-06	5.65E-06	4.40E-06	3.61E-06	2.89E-06	1.75E-06	1.58E-06	7.36E-05
U-234											
U-234	8.87E-04	9.13E-04	1.48E-03	3.80E-04	3.85E-04	2.85E-04	2.34E-04	1.78E-04	1.02E-04	9.26E-05	4.94E-03
TH-230	4.66E-07	4.80E-07	7.54E-07	1.96E-07	1.98E-07	1.50E-07	1.23E-07	9.58E-08	5.61E-08	5.09E-08	2.57E-06
RA-226	1.00E-05	1.03E-05	1.51E-05	4.87E-06	4.92E-06	3.90E-06	3.36E-06	2.92E-06	2.14E-06	2.02E-06	5.95E-05
PB-210	2.02E-09	2.08E-09	3.53E-09	9.14E-10	9.24E-10	6.86E-10	5.63E-10	4.24E-10	2.41E-10	2.18E-10	1.16E-08

Source: 2

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	1.40E-02	4.40E-01	5.16E-02	1.40E-02	4.40E-01	1.90E-02	1.41E-01	3.33E-02	1.27E-02	3.27E-02	1.20E+00
U-234	3.06E-09	1.16E-07	1.31E-08	3.06E-09	1.16E-07	4.39E-09	3.72E-08	8.72E-09	2.93E-09	8.66E-09	3.14E-07
TH-230	8.38E-13	2.99E-11	3.39E-12	8.38E-13	2.99E-11	1.18E-12	9.57E-12	2.22E-12	7.87E-13	2.23E-12	8.09E-11
RA-226	2.24E-11	3.76E-10	5.39E-11	2.24E-11	3.76E-10	2.45E-11	1.25E-10	3.59E-11	1.89E-11	3.51E-11	1.09E-09
PB-210	1.86E-15	7.01E-14	8.11E-15	1.86E-15	7.01E-14	2.71E-15	2.24E-14	5.38E-15	1.81E-15	5.21E-15	1.89E-13
U-235											
U-235	3.50E-03	1.18E-01	1.35E-02	3.50E-03	1.18E-01	4.84E-03	3.77E-02	8.77E-03	3.23E-03	8.76E-03	3.19E-01
PA-231	3.48E-07	1.12E-05	1.31E-06	3.48E-07	1.12E-05	4.76E-07	3.59E-06	8.46E-07	3.18E-07	8.35E-07	3.05E-05
AC-227	9.62E-07	3.10E-05	3.60E-06	9.62E-07	3.10E-05	1.31E-06	9.92E-06	2.33E-06	8.76E-07	2.31E-06	8.43E-05
U-234											
U-234	5.68E-05	2.16E-03	2.43E-04	5.68E-05	2.16E-03	8.15E-05	6.91E-04	1.62E-04	5.44E-05	1.61E-04	5.83E-03
TH-230	3.11E-08	1.11E-06	1.26E-07	3.11E-08	1.11E-06	4.38E-08	3.56E-07	8.26E-08	2.92E-08	8.27E-08	3.01E-06
RA-226	1.25E-06	2.09E-05	3.00E-06	1.25E-06	2.09E-05	1.36E-06	6.95E-06	2.00E-06	1.05E-06	1.95E-06	6.07E-05
PB-210	1.34E-10	5.05E-09	5.85E-10	1.34E-10	5.05E-09	1.95E-10	1.62E-09	3.88E-10	1.30E-10	3.76E-10	1.37E-08

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.I Evaluation Time: 20.0000 years

Source: 3

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	8.04E-02	8.04E-02	3.00E-01	1.93E-01	1.93E-01	5.55E-01	1.93E-01	2.75E-01	1.03E-01	7.68E-02	2.05E+00
U-234	2.06E-08	2.06E-08	7.97E-08	4.85E-08	4.85E-08	1.40E-07	4.85E-08	7.30E-08	2.62E-08	1.96E-08	5.25E-07
TH-230	5.32E-12	5.32E-12	2.03E-11	1.27E-11	1.27E-11	3.67E-11	1.27E-11	1.86E-11	6.79E-12	5.06E-12	1.36E-10
RA-226	8.80E-11	8.80E-11	2.70E-10	1.82E-10	1.82E-10	4.84E-10	1.78E-10	2.45E-10	1.03E-10	8.08E-11	1.90E-09
PB-210	1.27E-14	1.27E-14	4.90E-14	2.84E-14	2.84E-14	8.20E-14	2.84E-14	4.49E-14	1.62E-14	1.21E-14	3.15E-13
U-235											
U-235	2.11E-02	2.11E-02	7.96E-02	5.11E-02	5.11E-02	1.47E-01	5.11E-02	7.29E-02	2.70E-02	2.01E-02	5.42E-01
PA-231	2.04E-06	2.04E-06	7.63E-06	4.90E-06	4.90E-06	1.41E-05	4.90E-06	6.99E-06	2.61E-06	1.94E-06	5.21E-05
AC-227	5.61E-06	5.61E-06	2.10E-05	1.36E-05	1.36E-05	3.91E-05	1.36E-05	1.93E-05	7.19E-06	5.36E-06	1.44E-04
U-234											
U-234	3.82E-04	3.82E-04	1.48E-03	9.00E-04	9.00E-04	2.59E-03	9.00E-04	1.36E-03	4.87E-04	3.63E-04	9.75E-03
TH-230	1.97E-07	1.97E-07	7.54E-07	4.73E-07	4.73E-07	1.36E-06	4.73E-07	6.91E-07	2.52E-07	1.88E-07	5.06E-06
RA-226	4.90E-06	4.90E-06	1.51E-05	1.02E-05	1.02E-05	2.70E-05	9.92E-06	1.37E-05	5.73E-06	4.50E-06	1.06E-04
PB-210	9.19E-10	9.19E-10	3.53E-09	2.05E-09	2.05E-09	5.91E-09	2.05E-09	3.24E-09	1.17E-09	8.74E-10	2.27E-08

Source: 4

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	4.40E-01	1.40E-02	5.16E-02	4.40E-01	1.40E-02	8.66E-02	1.29E-02	2.28E-02	2.91E-02	9.47E-03	1.12E+00
U-234	1.16E-07	3.06E-09	1.31E-08	1.16E-07	3.06E-09	2.39E-08	2.81E-09	5.59E-09	8.03E-09	2.07E-09	2.94E-07
TH-230	2.99E-11	8.38E-13	3.39E-12	2.99E-11	8.38E-13	5.96E-12	7.70E-13	1.47E-12	2.00E-12	5.67E-13	7.57E-11
RA-226	3.76E-10	2.24E-11	5.39E-11	3.76E-10	2.24E-11	7.97E-11	1.93E-11	2.74E-11	3.20E-11	1.63E-11	1.03E-09
PB-210	7.01E-14	1.86E-15	8.11E-15	7.01E-14	1.86E-15	1.46E-14	1.71E-15	3.47E-15	4.90E-15	1.26E-15	1.78E-13
U-235											
U-235	1.18E-01	3.50E-03	1.35E-02	1.18E-01	3.50E-03	2.31E-02	3.22E-03	5.90E-03	7.74E-03	2.37E-03	2.98E-01
PA-231	1.12E-05	3.48E-07	1.31E-06	1.12E-05	3.48E-07	2.21E-06	3.20E-07	5.74E-07	7.41E-07	2.36E-07	2.85E-05
AC-227	3.10E-05	9.62E-07	3.60E-06	3.10E-05	9.62E-07	6.08E-06	8.84E-07	1.58E-06	2.04E-06	6.51E-07	7.88E-05
U-234											
U-234	2.16E-03	5.68E-05	2.43E-04	2.16E-03	5.68E-05	4.44E-04	5.22E-05	1.04E-04	1.49E-04	3.85E-05	5.47E-03
TH-230	1.11E-06	3.11E-08	1.26E-07	1.11E-06	3.11E-08	2.21E-07	2.86E-08	5.45E-08	7.42E-08	2.11E-08	2.81E-06
RA-226	2.09E-05	1.25E-06	3.00E-06	2.09E-05	1.25E-06	4.44E-06	1.08E-06	1.52E-06	1.78E-06	9.07E-07	5.71E-05
PB-210	5.05E-09	1.34E-10	5.85E-10	5.05E-09	1.34E-10	1.05E-09	1.23E-10	2.50E-10	3.54E-10	9.09E-11	1.28E-08

**SRAILLD program output, version 2.10 6/11/97 12:50 Page: 5- 8
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 20.0000 years

Source: 5

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238	6.53E-02	9.16E-02	2.78E-01	1.23E-01	2.96E-01	2.96E-01	2.96E-01	2.74E-01	8.70E-02	8.70E-02	1.89E+00
U-234	1.67E-08	2.35E-08	7.41E-08	3.10E-08	7.46E-08	7.46E-08	7.46E-08	7.28E-08	2.22E-08	2.22E-08	4.86E-07
TH-230	4.32E-12	6.06E-12	1.89E-11	8.15E-12	1.96E-11	1.96E-11	1.96E-11	1.85E-11	5.74E-12	5.74E-12	1.26E-10
RA-226	6.99E-11	9.22E-11	2.47E-10	1.19E-10	2.64E-10	2.68E-10	2.68E-10	2.47E-10	9.24E-11	9.24E-11	1.76E-09
PB-210	1.04E-14	1.45E-14	4.55E-14	1.82E-14	4.38E-14	4.38E-14	4.38E-14	4.48E-14	1.37E-14	1.37E-14	2.92E-13
U-235	1.71E-02	2.40E-02	7.39E-02	3.27E-02	7.86E-02	7.86E-02	7.86E-02	7.26E-02	2.28E-02	2.28E-02	5.02E-01
PA-231	1.65E-06	2.32E-06	7.08E-06	3.13E-06	7.53E-06	7.53E-06	7.53E-06	6.97E-06	2.20E-06	2.20E-06	4.82E-05
AC-227	4.56E-06	6.40E-06	1.95E-05	8.67E-06	2.08E-05	2.08E-05	2.08E-05	1.92E-05	6.07E-06	6.07E-06	1.33E-04
U-234	3.11E-04	4.36E-04	1.38E-03	5.76E-04	1.39E-03	1.39E-03	1.39E-03	1.35E-03	4.12E-04	4.12E-04	9.03E-03
TH-230	1.60E-07	2.25E-07	7.00E-07	3.03E-07	7.28E-07	7.28E-07	7.28E-07	6.88E-07	2.13E-07	2.13E-07	4.69E-06
RA-226	3.89E-06	5.13E-06	1.38E-05	6.60E-06	1.47E-05	1.49E-05	1.49E-05	1.38E-05	5.14E-06	5.14E-06	9.80E-05
PB-210	7.47E-10	1.05E-09	3.28E-09	1.31E-09	3.16E-09	3.16E-09	3.16E-09	3.23E-09	9.91E-10	9.91E-10	2.11E-08

Source: 6

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238	1.15E-02	4.01E-02	3.30E-02	1.53E-02	1.59E-01	2.54E-02	4.69E-01	8.56E-02	2.55E-02	4.76E-01	1.34E+00
U-234	2.51E-09	1.05E-08	8.34E-09	3.35E-09	4.15E-08	5.87E-09	1.22E-07	2.23E-08	5.88E-09	1.24E-07	3.47E-07
TH-230	6.88E-13	2.71E-12	2.16E-12	9.18E-13	1.07E-11	1.58E-12	3.17E-11	5.70E-12	1.58E-12	3.22E-11	8.99E-11
RA-226	1.94E-11	4.26E-11	3.72E-11	2.28E-11	1.42E-10	3.38E-11	4.03E-10	8.38E-11	3.39E-11	4.09E-10	1.23E-09
PB-210	1.53E-15	6.27E-15	5.17E-15	2.04E-15	2.49E-14	3.62E-15	7.33E-14	1.38E-14	3.62E-15	7.45E-14	2.09E-13
U-235	2.88E-03	1.07E-02	8.62E-03	3.84E-03	4.25E-02	6.48E-03	1.25E-01	2.25E-02	6.49E-03	1.27E-01	3.56E-01
PA-231	2.86E-07	1.02E-06	8.35E-07	3.82E-07	4.05E-06	6.37E-07	1.20E-05	2.17E-06	6.38E-07	1.21E-05	3.41E-05
AC-227	7.90E-07	2.83E-06	2.30E-06	1.06E-06	1.12E-05	1.76E-06	3.31E-05	5.98E-06	1.76E-06	3.36E-05	9.43E-05
U-234	4.66E-05	1.94E-04	1.55E-04	6.23E-05	7.70E-04	1.09E-04	2.27E-03	4.14E-04	1.09E-04	2.31E-03	6.44E-03
TH-230	2.55E-08	1.01E-07	8.03E-08	3.41E-08	3.99E-07	5.86E-08	1.18E-06	2.12E-07	5.87E-08	1.20E-06	3.34E-06
RA-226	1.08E-06	2.37E-06	2.07E-06	1.27E-06	7.89E-06	1.88E-06	2.24E-05	4.66E-06	1.89E-06	2.28E-05	6.83E-05
PB-210	1.10E-10	4.52E-10	3.72E-10	1.47E-10	1.79E-09	2.61E-10	5.29E-09	9.93E-10	2.61E-10	5.37E-09	1.50E-08

** RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:58 Page: 5- 4 : 90 **

Title : Youngs

Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 20.0000 years

Source: 7

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	2.10E-02	2.37E-02	3.99E-02	4.28E-02	5.36E-02	8.70E-02	8.70E-02	2.78E-01	2.96E-01	2.96E-01	1.23E+00
U-234	4.55E-09	5.14E-09	9.12E-09	1.03E-08	1.30E-08	2.22E-08	2.22E-08	7.40E-08	7.47E-08	7.47E-08	3.10E-07
TH-230	1.25E-12	1.41E-12	2.46E-12	2.73E-12	3.43E-12	5.74E-12	5.74E-12	1.88E-11	1.96E-11	1.96E-11	8.08E-11
RA-226	3.35E-11	3.59E-11	4.98E-11	5.16E-11	6.09E-11	9.24E-11	9.24E-11	2.51E-10	2.69E-10	2.69E-10	1.20E-09
PB-210	2.76E-15	3.11E-15	5.61E-15	6.40E-15	8.03E-15	1.37E-14	1.37E-14	4.55E-14	4.39E-14	4.39E-14	1.87E-13
U-235											
U-235	5.25E-03	5.92E-03	1.01E-02	1.10E-02	1.38E-02	2.28E-02	2.28E-02	7.38E-02	7.87E-02	7.87E-02	3.23E-01
PA-231	5.23E-07	5.90E-07	9.99E-07	1.08E-06	1.35E-06	2.20E-06	2.20E-06	7.07E-06	7.54E-06	7.54E-06	3.11E-05
AC-227	1.44E-06	1.63E-06	2.76E-06	2.97E-06	3.73E-06	6.08E-06	6.08E-06	1.95E-05	2.09E-05	2.09E-05	8.59E-05
U-234											
U-234	8.45E-05	9.54E-05	1.69E-04	1.92E-04	2.41E-04	4.12E-04	4.12E-04	1.37E-03	1.39E-03	1.39E-03	5.75E-03
TH-230	4.64E-08	5.24E-08	9.14E-08	1.01E-07	1.27E-07	2.13E-07	2.13E-07	6.99E-07	7.28E-07	7.28E-07	3.00E-06
RA-226	1.86E-06	2.00E-06	2.77E-06	2.87E-06	3.39E-06	5.15E-06	5.15E-06	1.40E-05	1.50E-05	1.50E-05	6.71E-05
PB-210	1.99E-10	2.25E-10	4.04E-10	4.62E-10	5.79E-10	9.91E-10	9.91E-10	3.28E-09	3.16E-09	3.16E-09	1.35E-08

Source: 8

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	4.01E-02	1.54E-02	4.81E-02	1.58E-01	2.26E-02	4.69E-01	2.54E-02	8.56E-02	4.76E-01	2.55E-02	1.37E+00
U-234	1.05E-08	3.55E-09	1.29E-08	4.14E-08	5.21E-09	1.22E-07	5.87E-09	2.23E-08	1.24E-07	5.88E-09	3.54E-07
TH-230	2.71E-12	9.55E-13	3.26E-12	1.07E-11	1.40E-12	3.17E-11	1.58E-12	5.70E-12	3.22E-11	1.58E-12	9.18E-11
RA-226	4.25E-11	2.26E-11	4.94E-11	1.41E-10	2.88E-11	4.03E-10	3.38E-11	8.38E-11	4.09E-10	3.39E-11	1.25E-09
PB-210	6.30E-15	2.19E-15	7.93E-15	2.49E-14	3.21E-15	7.33E-14	3.62E-15	1.38E-14	7.45E-14	3.62E-15	2.13E-13
U-235											
U-235	1.07E-02	3.92E-03	1.27E-02	4.23E-02	5.75E-03	1.25E-01	6.48E-03	2.25E-02	1.27E-01	6.49E-03	3.63E-01
PA-231	1.02E-06	3.86E-07	1.22E-06	4.04E-06	5.65E-07	1.20E-05	6.37E-07	2.17E-06	1.21E-05	6.38E-07	3.48E-05
AC-227	2.83E-06	1.06E-06	3.37E-06	1.12E-05	1.56E-06	3.31E-05	1.76E-06	5.98E-06	3.36E-05	1.76E-06	9.61E-05
U-234											
U-234	1.95E-04	6.60E-05	2.40E-04	7.69E-04	9.67E-05	2.27E-03	1.09E-04	4.14E-04	2.31E-03	1.09E-04	6.58E-03
TH-230	1.01E-07	3.55E-08	1.21E-07	3.98E-07	5.20E-08	1.18E-06	5.86E-08	2.12E-07	1.20E-06	5.87E-08	3.41E-06
RA-226	2.37E-06	1.26E-06	2.75E-06	7.86E-06	1.61E-06	2.24E-05	1.88E-06	4.66E-06	2.28E-05	1.89E-06	6.95E-05
PB-210	4.54E-10	1.58E-10	5.72E-10	1.79E-09	2.31E-10	5.29E-09	2.61E-10	9.93E-10	5.37E-09	2.61E-10	1.54E-08

** RESRAD-BUILD Program Output, Version 2.10 06/11/97 12:58 Page: 5- 4 : 91
Title : Youngs
Input File : C:\RESBLD\JYBASE1D.IEvaluation Time: 20.0000 years

Source: 9

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238	2.90E-01	2.90E-01	5.76E-01	2.90E-01	2.90E-01	3.23E-01	2.19E-01	2.32E-01	1.19E-01	9.84E-02	2.73E+00
U-234	7.33E-08	7.33E-08	1.46E-07	7.33E-08	7.33E-08	8.18E-08	5.54E-08	5.88E-08	3.02E-08	2.49E-08	6.90E-07
TH-230	1.92E-11	1.92E-11	3.81E-11	1.92E-11	1.92E-11	2.14E-11	1.45E-11	1.54E-11	7.91E-12	6.51E-12	1.81E-10
RA-226	2.86E-10	2.86E-10	5.28E-10	2.86E-10	2.86E-10	3.06E-10	2.17E-10	2.29E-10	1.33E-10	1.16E-10	2.67E-09
PB-210	4.46E-14	4.46E-14	8.87E-14	4.46E-14	4.46E-14	4.98E-14	3.37E-14	3.58E-14	1.84E-14	1.52E-14	4.20E-13
U-235											
U-235	7.65E-02	7.65E-02	1.52E-01	7.65E-02	7.65E-02	8.54E-02	5.78E-02	6.13E-02	3.15E-02	2.60E-02	7.20E-01
PA-231	7.35E-06	7.35E-06	1.46E-05	7.35E-06	7.35E-06	8.21E-06	5.56E-06	5.90E-06	3.03E-06	2.50E-06	6.92E-05
AC-227	2.03E-05	2.03E-05	4.04E-05	2.03E-05	2.03E-05	2.27E-05	1.54E-05	1.63E-05	8.38E-06	6.90E-06	1.91E-04
U-234											
U-234	1.36E-03	1.36E-03	2.71E-03	1.36E-03	1.36E-03	1.52E-03	1.03E-03	1.09E-03	5.61E-04	4.62E-04	1.28E-02
TH-230	7.12E-07	7.12E-07	1.42E-06	7.12E-07	7.12E-07	7.95E-07	5.38E-07	5.71E-07	2.94E-07	2.42E-07	6.70E-06
RA-226	1.59E-05	1.59E-05	2.94E-05	1.59E-05	1.59E-05	1.70E-05	1.21E-05	1.27E-05	7.43E-06	6.44E-06	1.49E-04
PB-210	3.22E-09	3.22E-09	6.40E-09	3.22E-09	3.22E-09	3.59E-09	2.43E-09	2.58E-09	1.33E-09	1.09E-09	3.03E-08

Source: 10

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	7.31E-02	9.02E-02	1.77E-01	1.35E-01	1.99E-01	2.66E-01	2.66E-01	4.34E-01	2.66E-01	2.66E-01	2.17E+00
U-234	1.87E-08	2.31E-08	4.54E-08	3.46E-08	5.10E-08	6.80E-08	6.80E-08	1.11E-07	6.82E-08	6.82E-08	5.56E-07
TH-230	4.86E-12	6.00E-12	1.18E-11	9.00E-12	1.32E-11	1.77E-11	1.77E-11	2.88E-11	1.77E-11	1.77E-11	1.45E-10
RA-226	8.85E-11	1.03E-10	1.76E-10	1.41E-10	1.95E-10	2.58E-10	2.58E-10	4.00E-10	2.59E-10	2.59E-10	2.14E-09
PB-210	1.15E-14	1.42E-14	2.78E-14	2.13E-14	3.13E-14	4.17E-14	4.17E-14	6.81E-14	4.19E-14	4.19E-14	3.41E-13
U-235											
U-235	1.93E-02	2.38E-02	4.68E-02	3.57E-02	5.25E-02	7.01E-02	7.01E-02	1.14E-01	7.04E-02	7.04E-02	5.74E-01
PA-231	1.86E-06	2.29E-06	4.50E-06	3.43E-06	5.05E-06	6.74E-06	6.74E-06	1.10E-05	6.77E-06	6.77E-06	5.52E-05
AC-227	5.12E-06	6.32E-06	1.24E-05	9.48E-06	1.39E-05	1.86E-05	1.86E-05	3.04E-05	1.87E-05	1.87E-05	1.52E-04
U-234											
U-234	3.48E-04	4.29E-04	8.42E-04	6.43E-04	9.46E-04	1.26E-03	1.26E-03	2.06E-03	1.27E-03	1.27E-03	1.03E-02
TH-230	1.81E-07	2.23E-07	4.38E-07	3.34E-07	4.92E-07	6.56E-07	6.56E-07	1.07E-06	6.58E-07	6.58E-07	5.37E-06
RA-226	4.92E-06	5.73E-06	9.81E-06	7.84E-06	1.08E-05	1.44E-05	1.44E-05	2.22E-05	1.44E-05	1.44E-05	1.19E-04
PB-210	8.29E-10	1.02E-09	2.01E-09	1.53E-09	2.26E-09	3.01E-09	3.01E-09	4.91E-09	3.02E-09	3.02E-09	2.46E-08

RESRAD-BUILD Dose (Time) Tables

Receptor Doses By Time

[mrem]

Time [yr]

1	0.00E+00	1.00E+00	2.00E+00	5.00E+00	2.00E+01
2	1.60E+00	1.60E+00	1.60E+00	1.60E+00	1.56E+00
3	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.63E+00
4	2.40E+00	2.40E+00	2.40E+00	2.40E+00	2.35E+00
5	1.94E+00	1.94E+00	1.94E+00	1.94E+00	1.89E+00
6	2.26E+00	2.26E+00	2.26E+00	2.26E+00	2.22E+00
7	2.82E+00	2.82E+00	2.82E+00	2.82E+00	2.78E+00
8	2.28E+00	2.28E+00	2.28E+00	2.28E+00	2.23E+00
9	2.28E+00	2.28E+00	2.28E+00	2.28E+00	2.24E+00
10	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.83E+00
	1.81E+00	1.81E+00	1.81E+00	1.81E+00	1.77E+00

< maximum dose = 2.82 mrem / yr.

Receptor Doses Per Year

[mrem/yr]

Time [yr]

1	0.00E+00	1.00E+00	2.00E+00	5.00E+00	2.00E+01
2	2.43E+00	2.43E+00	2.43E+00	2.43E+00	2.37E+00
3	2.54E+00	2.54E+00	2.54E+00	2.54E+00	2.47E+00
4	3.65E+00	3.65E+00	3.65E+00	3.65E+00	3.58E+00
5	2.95E+00	2.95E+00	2.95E+00	2.95E+00	2.88E+00
6	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.38E+00
7	4.30E+00	4.30E+00	4.30E+00	4.30E+00	4.23E+00
8	3.46E+00	3.46E+00	3.46E+00	3.46E+00	3.40E+00
9	3.46E+00	3.46E+00	3.46E+00	3.46E+00	3.40E+00
10	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.78E+00
	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.69E+00

Appendix B

Demolition Scenario RESRAD-BUILD Report

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Title : Youngs

Input File : C:\RESBLD\JYD&D2J.IN

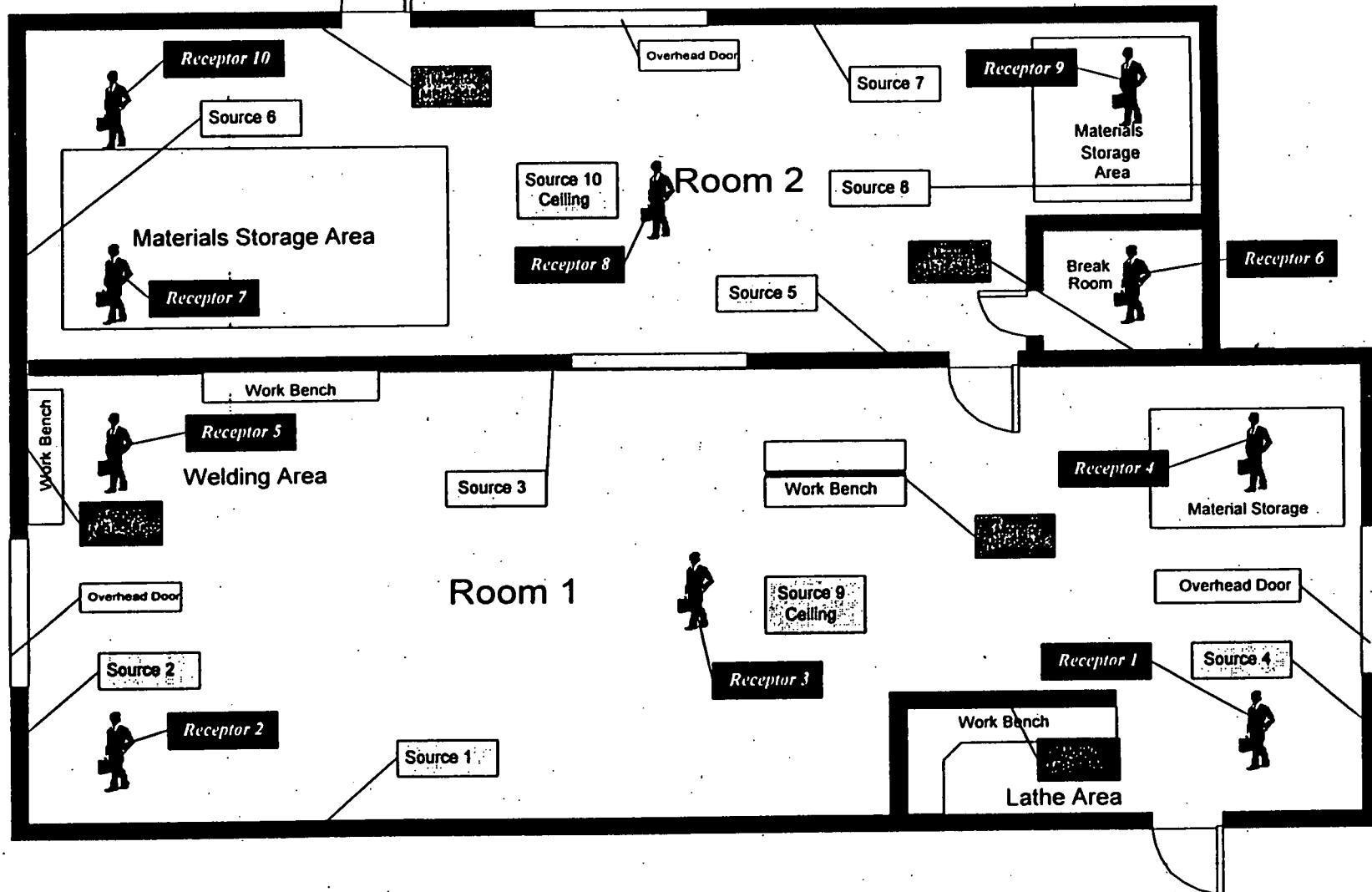
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Demolition
Scenario

MS-00685-CS, Fabrication Shop Buildings
Suspect Contaminated Buildings from Mexican Hat Mill



** RESRAD-BUILD Program Output, Version 2.10 06/27/97 09:40 Page: 0- 1 : 2 **
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.IN

RESRAD-BUILD Input Parameters

Number of Sources : 10
Number of Receptors: 10
Total Time : 3.000000E+01 days
Fraction Inside : 5.000000E-01

Receptor Information

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	33.600	3.000	1.000	1.000	1.80E+01	1.00E-04
2	1	3.000	3.000	1.000	1.000	1.80E+01	1.00E-04
3	1	18.300	9.150	1.000	1.000	1.80E+01	1.00E-04
4	1	33.600	15.300	1.000	1.000	1.80E+01	1.00E-04
5	1	3.000	15.300	1.000	1.000	1.80E+01	1.00E-04
6	2	27.500	21.300	1.000	1.000	1.80E+01	1.00E-04
7	2	3.000	21.300	1.000	1.000	1.80E+01	1.00E-04
8	2	15.250	27.800	1.000	1.000	1.80E+01	1.00E-04
9	2	27.500	34.200	1.000	1.000	1.80E+01	1.00E-04
10	2	3.000	34.200	1.000	1.000	1.80E+01	1.00E-04

Building Information

Building Air Exchange Rate: 3.50E+00 1/hr

Height[m] Air Exchanges [m³/hr]
Area [m²]

	*****	*****
	*	*
	*	*
	*	<=Q02: 6.52E+03
H2: 10.360	Room 2	Q20 : 6.42E+03
	LAMBDA: 9.97E+00	*
Area 576.000	*	*
	/\ N12:-1.00E+02	Q21 : 5.31E+04
	*****	Q12 : 5.30E+04
		<=Q01: 3.50E+04
H1: 8.800	Room 1	Q10 : 3.51E+04
Area 670.000	LAMBDA: 1.49E+01	*
	*	*
	*	*
	*****	*****

Deposition velocity: 1.00E-02 [m/s] Resuspension Rate: 5.00E-05 [1/s]

** RESRAD-BUILD Program Output, Version 2.10 06/27/97 09:40 Page: 0- 3 : 4 **
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.IN

Source Information

Source: 1

Location:: Room : 1 x: 18.20 y: 0.00 z: 4.40[m]
Geometry:: Type: Area Area:3.22E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 1.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m2]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m2)]	External (Volume) [mrem/yr/ (pCi/m3)]	Submersion [mrem/yr/ (pCi/m3)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09

Title : Youngs

Input File : C:\RESBLD\JYD&D2J.IN

Source: 2

Location:: Room : 1 x: 0.00 y: 9.15 z: 4.40[m]
 Geometry:: Type: Area Area: 1.61E+02 [m²] Direction: x

Pathway ::

Direct Ingestion Rate: 2.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m ²]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m ²)]	External (Volume) [mrem/yr/ (pCi/m ³)]	Submersion [mrem/yr/ (pCi/m ³)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09
					1.430E-05

** RESRAD-BUILD Program Output, Version 2.10 06/27/97 09:40 Page: 0- 3 : 6 **
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.IN

Source: 3

Location:: Room : 1 x: 18.30 y: 18.30 z: 4.40[m]
Geometry:: Type: Area Area:3.22E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 1.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m2]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m2)]	External (Volume) [mrem/yr/ (pCi/m3)]	Submersion [mrem/yr/ (pCi/m3)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09

Title : Youngs

Input File : C:\RESBLD\JYD&D2J.IN

Source: 4

Location:: Room : 1 x: 36.60 y: 9.15 z: 4.40[m]
 Geometry:: Type: Area Area: 1.61E+02 [m²] Direction: x
 Pathway ::

Direct Ingestion Rate: 2.000E-07 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 1.000E-02

Time to Remove: 3.000E+01 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m ²]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m ²)]	External (Volume) [mrem/yr/ (pCi/m ³)]	Submersion [mrem/yr/ (pCi/m ³)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09
					1.430E-05

Title : Youngs
 Input File : C:\RESBLD\JYD&D2J.IN

Source: 5

Location:: Room : 2 x: 15.25 y: 18.30 z: 5.20[m]
 Geometry:: Type: Area Area: 3.15E+02 [m²] Direction: y
 Pathway ::
 Direct Ingestion Rate: 1.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]
 Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m ²]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m ²)]	External (Volume) [mrem/yr/ (pCi/m ³)]	Submersion [mrem/yr/ (pCi/m ³)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09
					1.430E-05

Source: 6

Location:: Room : 2 x: 0.00 y: 27.80 z: 5.18[m]
Geometry:: Type: Area Area: 1.95E+02 [m²] Direction: x

Pathway ::

Direct Ingestion Rate: 2.000E-07 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 1.000E-02

Time to Remove: 3.000E+01 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion	Inhalation	External	External	Submersion
	[pCi/m ²]	[mrem/pCi]	(Surface)	(Volume)	
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09

Title : Youngs
 Input File : C:\RESBLD\JYD&D2J.IN

Source: 7

Location:: Room : 2 x: 15.25 y: 37.20 z: 5.18[m]
 Geometry:: Type: Area Area: 3.15E+02 [m²] Direction: y
 Pathway ::
 Direct Ingestion Rate: 1.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]
 Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m ²]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m ²)]	External (Volume) [mrem/yr/ (pCi/m ³)]	Submersion [mrem/yr/ (pCi/m ³)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09
					1.430E-05

Source: 8

Location:: Room : 2 x: 30.50 y: 27.80 z: 5.18[m]
Geometry:: Type: Area Area: 1.95E+02 [m2] Direction: x

Pathway ::

Direct Ingestion Rate: 2.000E-07 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 1.000E-02

Time to Remove: 3.000E+01 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m2]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m2)]	External (Volume) [mrem/yr/ (pCi/m3)]	Submersion [mrem/yr/ (pCi/m3)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09
					1.430E-05

** RESRAD-BUILD Program Output, Version 2.10 06/27/97 09:40 Page: 0- 3 : 12 **
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.IN

Source: 9

Location:: Room : 1 x: 18.30 y: 9.15 z: 8.80[m]
Geometry:: Type: Area Area: 6.70E+02 [m²] Direction: z
Pathway ::
 Direct Ingestion Rate: 5.000E-08 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

 Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m ²]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m ²)]	External (Volume) [mrem/yr/ (pCi/m ³)]	Submersion [mrem/yr/ (pCi/m ³)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09

Title : Youngs
 Input File : C:\RESBLD\JYD&D2J.IN

Source: 10

Location:: Room : 2 x: 15.25 y: 27.80 z: 10.36[m]
 Geometry:: Type: Area Area: 5.76E+02 [m²] Direction: z

Pathway ::

Direct Ingestion Rate: 6.000E-08 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration

Dose Conversion Factors

	Ingestion [pCi/m ²]	Inhalation [mrem/pCi]	External (Surface) [mrem/yr/ (pCi/m ²)]	External (Volume) [mrem/yr/ (pCi/m ³)]	Submersion [mrem/yr/ (pCi/m ³)]
U-238	2.150E+06	2.500E-04	1.200E-01	3.530E-06	9.510E-08
U-235	1.000E+05	2.500E-04	1.200E-01	1.950E-05	4.740E-07
U-234	2.260E+06	2.600E-04	1.300E-01	8.750E-08	2.520E-10
PA-231	0.000E+00	1.100E-02	1.300E+00	4.760E-06	1.190E-07
TH-230	0.000E+00	5.300E-04	3.200E-01	8.780E-08	7.570E-10
AC-227	0.000E+00	1.500E-02	6.700E+00	4.530E-05	1.260E-06
RA-226	0.000E+00	1.100E-03	7.900E-03	1.940E-04	7.000E-06
PB-210	0.000E+00	6.700E-03	2.100E-02	4.140E-07	3.820E-09
					1.430E-05

** RESRAD-BUILD Program Output, Version 2.10 06/27/97 09:41 Page: 1- 1 : 14 **
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.INE Evaluation Time: 0.000000 years

Assessment for Time: 1
Time = 0.00E+00 yr

Source Information

Source: 1
Location:: Room : 1 x: 18.20 y: 0.00 z: 4.40 [m]
Geometry:: Type: Area Area: 3.22E+02 [m²] Direction: y
Pathway ::
Direct Ingestion Rate: 1.000E-07 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 1.000E-02
Time to Remove: 3.000E+01 [day]

Contamination::	Nuclide	Concentration [pCi/m ²]
	U-238	2.150E+06
	U-235	1.000E+05
	U-234	2.260E+06
	PA-231	0.000E+00
	TH-230	0.000E+00
	AC-227	0.000E+00
	RA-226	0.000E+00
	PB-210	0.000E+00

Title : Youngs

Input File : C:\RESBLD\JYD&D2J.INE Evaluation Time: 0.000000 years

Source: 2

Location:: Room : 1 x: 0.00 y: 9.15 z: 4.40 [m]
Geometry:: Type: Area Area:1.61E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 2.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.150E+06
 U-235 1.000E+05
 U-234 2.260E+06
 PA-231 0.000E+00
 TH-230 0.000E+00
 AC-227 0.000E+00
 RA-226 0.000E+00
 PB-210 0.000E+00

Source: 3

Location:: Room : 1 x: 18.30 y: 18.30 z: 4.40 [m]
Geometry:: Type: Area Area:3.22E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 1.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.150E+06
 U-235 1.000E+05
 U-234 2.260E+06
 PA-231 0.000E+00
 TH-230 0.000E+00
 AC-227 0.000E+00
 RA-226 0.000E+00
 PB-210 0.000E+00

** RESRAD-BUILD Program Output, Version 2.10 06/27/97 09:41 Page: 1- 1 : 16 **
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.INE Evaluation Time: 0.000000 years

Source: 4

Location:: Room : 1 x: 36.60 y: 9.15 z: 4.40 [m]
Geometry:: Type: Area Area: 1.61E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 2.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.150E+06
	U-235	1.000E+05
	U-234	2.260E+06
	PA-231	0.000E+00
	TH-230	0.000E+00
	AC-227	0.000E+00
	RA-226	0.000E+00
	PB-210	0.000E+00

Source: 5

Location:: Room : 2 x: 15.25 y: 18.30 z: 5.20 [m]
Geometry:: Type: Area Area: 3.15E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 1.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.150E+06
	U-235	1.000E+05
	U-234	2.260E+06
	PA-231	0.000E+00
	TH-230	0.000E+00
	AC-227	0.000E+00
	RA-226	0.000E+00
	PB-210	0.000E+00

** RADILD grab tpu, vers 2.1 6/2 09 Page 1- 1
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.INE Evaluation Time: 0.000000 years

Source: 6

Location:: Room : 2 x: 0.00 y: 27.80 z: 5.18 [m]
Geometry:: Type: Area Area:1.95E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 2.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.150E+06
 U-235 1.000E+05
 U-234 2.260E+06
 PA-231 0.000E+00
 TH-230 0.000E+00
 AC-227 0.000E+00
 RA-226 0.000E+00
 PB-210 0.000E+00

Source: 7

Location:: Room : 2 x: 15.25 y: 37.20 z: 5.18 [m]
Geometry:: Type: Area Area:3.15E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 1.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.150E+06
 U-235 1.000E+05
 U-234 2.260E+06
 PA-231 0.000E+00
 TH-230 0.000E+00
 AC-227 0.000E+00
 RA-226 0.000E+00
 PB-210 0.000E+00

** RESRAD-BUILD Program Output, Version 2.10 06/27/97 09:41 Page: 1- 1 : 18 **
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.INE evaluation Time: 0.000000 years

Source: 8

Location:: Room : 2 x: 30.50 y: 27.80 z: 5.18 [m]
Geometry:: Type: Area Area: 1.95E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 2.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.150E+06
	U-235	1.000E+05
	U-234	2.260E+06
	PA-231	0.000E+00
	TH-230	0.000E+00
	AC-227	0.000E+00
	RA-226	0.000E+00
	PB-210	0.000E+00

Source: 9

Location:: Room : 1 x: 18.30 y: 9.15 z: 8.80 [m]
Geometry:: Type: Area Area: 6.70E+02 [m2] Direction: z
Pathway ::
 Direct Ingestion Rate: 5.000E-08 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.150E+06
	U-235	1.000E+05
	U-234	2.260E+06
	PA-231	0.000E+00
	TH-230	0.000E+00
	AC-227	0.000E+00
	RA-226	0.000E+00
	PB-210	0.000E+00

** RADLD program, Version 2.1, 6/21/87 09:11 Page: 1- 1. 19
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.INEvaluation Time: 0.000000 years

Source: 10

Location:: Room : 2 x: 15.25 y: 27.80 z: 10.36 [m]
Geometry:: Type: Area Area: 5.76E+02 [m²] Direction: z
Pathway ::
 Direct Ingestion Rate: 6.000E-08 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination::	Nuclide	Concentration [pCi/m ²]
	U-238	2.150E+06
	U-235	1.000E+05
	U-234	2.260E+06
	PA-231	0.000E+00
	TH-230	0.000E+00
	AC-227	0.000E+00
	RA-226	0.000E+00
	PB-210	0.000E+00

** RESRAD-BUILD Program Output, Version 2.10 06/27/97 09:41 Page: 1- 2 : 20 **

Title : Youngs

Input File : C:\RESBLD\JYD&D2J.INE Evaluation Time: 0.000000 years

RESRAD-BUILD Dose Tables

Receptor Point-Source Doses

[mrem]

	Source 1	Source 2	Source 3	Source 4	Source 5	Source 6	Source 7	Source 8	Source 9	Source 10	Total
Receptor 1	1.8E+00	9.7E-01	1.8E+00	1.0E+00	1.5E+00	9.0E-01	1.5E+00	9.0E-01	3.6E+00	2.7E+00	1.7E+01
Receptor 2	1.8E+00	1.0E+00	1.8E+00	9.7E-01	1.5E+00	9.0E-01	1.5E+00	9.0E-01	3.6E+00	2.7E+00	1.7E+01
Receptor 3	1.8E+00	9.7E-01	1.8E+00	9.7E-01	1.5E+00	9.0E-01	1.5E+00	9.1E-01	3.7E+00	2.7E+00	1.7E+01
Receptor 4	1.8E+00	9.7E-01	1.8E+00	1.0E+00	1.5E+00	9.0E-01	1.5E+00	9.2E-01	3.6E+00	2.7E+00	1.7E+01
Receptor 5	1.8E+00	1.0E+00	1.8E+00	9.7E-01	1.5E+00	9.2E-01	1.5E+00	9.0E-01	3.6E+00	2.7E+00	1.7E+01
Receptor 6	1.5E+00	7.4E-01	1.5E+00	7.5E-01	2.6E+00	1.7E+00	2.6E+00	1.7E+00	3.1E+00	4.6E+00	2.1E+01
Receptor 7	1.5E+00	7.6E-01	1.5E+00	7.4E-01	2.6E+00	1.7E+00	2.6E+00	1.7E+00	3.1E+00	4.6E+00	2.1E+01
Receptor 8	1.5E+00	7.5E-01	1.5E+00	7.4E-01	2.6E+00	1.7E+00	2.6E+00	1.7E+00	3.1E+00	4.6E+00	2.1E+01
Receptor 9	1.5E+00	7.4E-01	1.5E+00	7.5E-01	2.6E+00	1.7E+00	2.6E+00	1.7E+00	3.1E+00	4.6E+00	2.1E+01
Receptor 10	1.5E+00	7.5E-01	1.5E+00	7.4E-01	2.6E+00	1.7E+00	2.6E+00	1.7E+00	3.1E+00	4.6E+00	2.1E+01
Total	1.7E+01	8.7E+00	1.7E+01	8.7E+00	2.0E+01	1.3E+01	2.0E+01	1.3E+01	3.4E+01	3.6E+01	1.9E+02

Title : Youngs

Input File : C:\RESBLD\JYD&D2J.INE Evaluation Time: 0.000000 years

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.77E-02	5.59E-07	1.97E-07	1.67E+00	2.84E-25	1.33E-01
2	1.83E-02	5.59E-07	1.97E-07	1.67E+00	2.84E-25	1.33E-01
3	2.80E-02	5.59E-07	1.97E-07	1.67E+00	2.84E-25	1.33E-01
4	7.45E-03	5.59E-07	1.97E-07	1.67E+00	2.84E-25	1.33E-01
5	7.54E-03	5.59E-07	1.97E-07	1.67E+00	2.84E-25	1.33E-01
6	5.88E-03	4.86E-07	1.75E-07	1.49E+00	3.78E-25	8.08E-05
7	4.82E-03	4.86E-07	1.75E-07	1.49E+00	3.78E-25	8.08E-05
8	3.87E-03	4.86E-07	1.75E-07	1.49E+00	3.78E-25	8.08E-05
9	2.34E-03	4.86E-07	1.75E-07	1.49E+00	3.78E-25	8.08E-05
10	2.13E-03	4.86E-07	1.75E-07	1.49E+00	3.78E-25	8.08E-05
Total	9.81E-02	5.22E-06	1.86E-06	1.58E+01	3.31E-24	6.67E-01

Source: 2

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.29E-03	2.80E-07	9.83E-08	8.34E-01	1.42E-25	1.33E-01
2	4.12E-02	2.80E-07	9.83E-08	8.34E-01	1.42E-25	1.33E-01
3	4.81E-03	2.80E-07	9.83E-08	8.34E-01	1.42E-25	1.33E-01
4	1.29E-03	2.80E-07	9.83E-08	8.34E-01	1.42E-25	1.33E-01
5	4.12E-02	2.80E-07	9.83E-08	8.34E-01	1.42E-25	1.33E-01
6	1.76E-03	2.43E-07	8.76E-08	7.43E-01	1.89E-25	4.04E-05
7	1.32E-02	2.43E-07	8.76E-08	7.43E-01	1.89E-25	4.04E-05
8	3.11E-03	2.43E-07	8.76E-08	7.43E-01	1.89E-25	4.04E-05
9	1.17E-03	2.43E-07	8.76E-08	7.43E-01	1.89E-25	4.04E-05
10	3.07E-03	2.43E-07	8.76E-08	7.43E-01	1.89E-25	4.04E-05
Total	1.12E-01	2.61E-06	9.30E-07	7.88E+00	1.65E-24	6.67E-01

Source: 3

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	7.49E-03	5.59E-07	1.97E-07	1.67E+00	2.84E-25	1.33E-01
2	7.49E-03	5.59E-07	1.97E-07	1.67E+00	2.84E-25	1.33E-01
3	2.80E-02	5.59E-07	1.97E-07	1.67E+00	2.84E-25	1.33E-01
4	1.80E-02	5.59E-07	1.97E-07	1.67E+00	2.84E-25	1.33E-01
5	1.80E-02	5.59E-07	1.97E-07	1.67E+00	2.84E-25	1.33E-01
6	5.19E-02	4.86E-07	1.75E-07	1.49E+00	3.78E-25	8.08E-05
7	1.80E-02	4.86E-07	1.75E-07	1.49E+00	3.78E-25	8.08E-05
8	2.57E-02	4.86E-07	1.75E-07	1.49E+00	3.78E-25	8.08E-05
9	9.59E-03	4.86E-07	1.75E-07	1.49E+00	3.78E-25	8.08E-05
10	7.16E-03	4.86E-07	1.75E-07	1.49E+00	3.78E-25	8.08E-05
Total	1.91E-01	5.22E-06	1.86E-06	1.58E+01	3.31E-24	6.67E-01

Title : Youngs

Input File : C:\RESBLD\JYD&D2J.INE Evaluation Time: 0.000000 years

Source: 4

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	4.12E-02	2.80E-07	9.83E-08	8.34E-01	1.42E-25	1.33E-01
2	1.29E-03	2.80E-07	9.83E-08	8.34E-01	1.42E-25	1.33E-01
3	4.81E-03	2.80E-07	9.83E-08	8.34E-01	1.42E-25	1.33E-01
4	4.12E-02	2.80E-07	9.83E-08	8.34E-01	1.42E-25	1.33E-01
5	1.29E-03	2.80E-07	9.83E-08	8.34E-01	1.42E-25	1.33E-01
6	8.11E-03	2.43E-07	8.76E-08	7.43E-01	1.89E-25	4.04E-05
7	1.19E-03	2.43E-07	8.76E-08	7.43E-01	1.89E-25	4.04E-05
8	2.12E-03	2.43E-07	8.76E-08	7.43E-01	1.89E-25	4.04E-05
9	2.72E-03	2.43E-07	8.76E-08	7.43E-01	1.89E-25	4.04E-05
10	8.74E-04	2.43E-07	8.76E-08	7.43E-01	1.89E-25	4.04E-05
Total	1.05E-01	2.61E-06	9.30E-07	7.88E+00	1.65E-24	6.67E-01

Source: 5

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	6.09E-03	4.88E-07	1.72E-07	1.46E+00	3.63E-25	7.92E-05
2	8.55E-03	4.88E-07	1.72E-07	1.46E+00	3.63E-25	7.92E-05
3	2.60E-02	4.88E-07	1.72E-07	1.46E+00	3.63E-25	7.92E-05
4	1.15E-02	4.88E-07	1.72E-07	1.46E+00	3.63E-25	7.92E-05
5	2.77E-02	4.88E-07	1.72E-07	1.46E+00	3.63E-25	7.92E-05
6	2.77E-02	7.90E-07	2.85E-07	2.41E+00	4.84E-25	1.31E-01
7	2.77E-02	7.90E-07	2.85E-07	2.41E+00	4.84E-25	1.31E-01
8	2.56E-02	7.90E-07	2.85E-07	2.41E+00	4.84E-25	1.31E-01
9	8.11E-03	7.90E-07	2.85E-07	2.41E+00	4.84E-25	1.31E-01
10	8.11E-03	7.90E-07	2.85E-07	2.41E+00	4.84E-25	1.31E-01
Total	1.77E-01	6.39E-06	2.28E-06	1.94E+01	4.24E-24	6.53E-01

Source: 6

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.06E-03	3.02E-07	1.06E-07	9.01E-01	2.25E-25	4.90E-05
2	3.75E-03	3.02E-07	1.06E-07	9.01E-01	2.25E-25	4.90E-05
3	3.08E-03	3.02E-07	1.06E-07	9.01E-01	2.25E-25	4.90E-05
4	1.42E-03	3.02E-07	1.06E-07	9.01E-01	2.25E-25	4.90E-05
5	1.49E-02	3.02E-07	1.06E-07	9.01E-01	2.25E-25	4.90E-05
6	2.36E-03	4.89E-07	1.76E-07	1.49E+00	3.00E-25	1.62E-01
7	4.39E-02	4.89E-07	1.76E-07	1.49E+00	3.00E-25	1.62E-01
8	7.98E-03	4.89E-07	1.76E-07	1.49E+00	3.00E-25	1.62E-01
9	2.36E-03	4.89E-07	1.76E-07	1.49E+00	3.00E-25	1.62E-01
10	4.46E-02	4.89E-07	1.76E-07	1.49E+00	3.00E-25	1.62E-01
Total	1.25E-01	3.95E-06	1.41E-06	1.20E+01	2.62E-24	8.08E-01

** ESRAD BLD Program Version 2.0 6/2 09 Page 1- 2
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.INE Evaluation Time: 0.000000 years

Source: 7

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.94E-03	4.88E-07	1.72E-07	1.46E+00	3.63E-25	7.92E-05
2	2.19E-03	4.88E-07	1.72E-07	1.46E+00	3.63E-25	7.92E-05
3	3.70E-03	4.88E-07	1.72E-07	1.46E+00	3.63E-25	7.92E-05
4	3.98E-03	4.88E-07	1.72E-07	1.46E+00	3.63E-25	7.92E-05
5	4.98E-03	4.88E-07	1.72E-07	1.46E+00	3.63E-25	7.92E-05
6	8.11E-03	7.90E-07	2.85E-07	2.41E+00	4.84E-25	1.31E-01
7	8.11E-03	7.90E-07	2.85E-07	2.41E+00	4.84E-25	1.31E-01
8	2.60E-02	7.90E-07	2.85E-07	2.41E+00	4.84E-25	1.31E-01
9	2.77E-02	7.90E-07	2.85E-07	2.41E+00	4.84E-25	1.31E-01
10	2.77E-02	7.90E-07	2.85E-07	2.41E+00	4.84E-25	1.31E-01
Total	1.14E-01	6.39E-06	2.28E-06	1.94E+01	4.24E-24	6.53E-01

Source: 8

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	3.76E-03	3.02E-07	1.06E-07	9.01E-01	2.25E-25	4.90E-05
2	1.43E-03	3.02E-07	1.06E-07	9.01E-01	2.25E-25	4.90E-05
3	4.50E-03	3.02E-07	1.06E-07	9.01E-01	2.25E-25	4.90E-05
4	1.48E-02	3.02E-07	1.06E-07	9.01E-01	2.25E-25	4.90E-05
5	2.09E-03	3.02E-07	1.06E-07	9.01E-01	2.25E-25	4.90E-05
6	4.39E-02	4.89E-07	1.76E-07	1.49E+00	3.00E-25	1.62E-01
7	2.36E-03	4.89E-07	1.76E-07	1.49E+00	3.00E-25	1.62E-01
8	7.98E-03	4.89E-07	1.76E-07	1.49E+00	3.00E-25	1.62E-01
9	4.46E-02	4.89E-07	1.76E-07	1.49E+00	3.00E-25	1.62E-01
10	2.36E-03	4.89E-07	1.76E-07	1.49E+00	3.00E-25	1.62E-01
Total	1.28E-01	3.95E-06	1.41E-06	1.20E+01	2.62E-24	8.08E-01

Source: 9

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	2.71E-02	1.16E-06	4.09E-07	3.47E+00	5.91E-25	1.39E-01
2	2.71E-02	1.16E-06	4.09E-07	3.47E+00	5.91E-25	1.39E-01
3	5.38E-02	1.16E-06	4.09E-07	3.47E+00	5.91E-25	1.39E-01
4	2.71E-02	1.16E-06	4.09E-07	3.47E+00	5.91E-25	1.39E-01
5	2.71E-02	1.16E-06	4.09E-07	3.47E+00	5.91E-25	1.39E-01
6	3.02E-02	1.01E-06	3.64E-07	3.09E+00	7.86E-25	1.68E-04
7	2.04E-02	1.01E-06	3.64E-07	3.09E+00	7.86E-25	1.68E-04
8	2.17E-02	1.01E-06	3.64E-07	3.09E+00	7.86E-25	1.68E-04
9	1.12E-02	1.01E-06	3.64E-07	3.09E+00	7.86E-25	1.68E-04
10	9.19E-03	1.01E-06	3.64E-07	3.09E+00	7.86E-25	1.68E-04
Total	2.55E-01	1.09E-05	3.87E-06	3.28E+01	6.88E-24	6.95E-01

** RESRAD-BUILD Program Output, Version 2.10 06/27/97 09:41 Page: 1- 3 : 24 **
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.INE Evaluation Time: 0.000000 years

Source: 10

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	6.83E-03	8.92E-07	3.14E-07	2.66E+00	6.65E-25	1.45E-04
2	8.42E-03	8.92E-07	3.14E-07	2.66E+00	6.65E-25	1.45E-04
3	1.65E-02	8.92E-07	3.14E-07	2.66E+00	6.65E-25	1.45E-04
4	1.26E-02	8.92E-07	3.14E-07	2.66E+00	6.65E-25	1.45E-04
5	1.86E-02	8.92E-07	3.14E-07	2.66E+00	6.65E-25	1.45E-04
6	2.48E-02	1.44E-06	5.21E-07	4.42E+00	8.85E-25	1.43E-01
7	2.48E-02	1.44E-06	5.21E-07	4.42E+00	8.85E-25	1.43E-01
8	4.05E-02	1.44E-06	5.21E-07	4.42E+00	8.85E-25	1.43E-01
9	2.49E-02	1.44E-06	5.21E-07	4.42E+00	8.85E-25	1.43E-01
10	2.49E-02	1.44E-06	5.21E-07	4.42E+00	8.85E-25	1.43E-01
Total	2.03E-01	1.17E-05	4.17E-06	3.54E+01	7.75E-24	7.17E-01

Nuclide Detail of Doses

[mrem]

Source: 1

Source: 2

Source: 3

** RESRAD-BUILD Program Output, Version 2.10 06/27/97 09:41 Page: 1- 4 : 26 **

Title : Youngs

Input File : C:\RESBLD\JYD&D2J.INE Evaluation Time: 0.000000 years

Source: 4

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	4.76E-01	4.45E-01	4.48E-01	4.76E-01	4.45E-01	3.46E-01	3.41E-01	3.41E-01	3.42E-01	3.41E-01	4.00E+00
U-235											
U-235	2.93E-02	2.09E-02	2.16E-02	2.93E-02	2.09E-02	1.75E-02	1.60E-02	1.62E-02	1.64E-02	1.60E-02	2.04E-01
U-234											
U-234	5.03E-01	5.03E-01	5.03E-01	5.03E-01	5.03E-01	3.87E-01	3.87E-01	3.87E-01	3.87E-01	3.87E-01	4.45E+00

Source: 5

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	6.71E-01	6.73E-01	6.87E-01	6.75E-01	6.88E-01	1.19E+00	1.19E+00	1.19E+00	1.17E+00	1.17E+00	9.30E+00
U-235											
U-235	3.22E-02	3.28E-02	3.64E-02	3.34E-02	3.68E-02	6.00E-02	6.00E-02	5.96E-02	5.59E-02	5.59E-02	4.63E-01
U-234											
U-234	7.59E-01	7.59E-01	7.59E-01	7.59E-01	7.59E-01	1.33E+00	1.33E+00	1.33E+00	1.33E+00	1.33E+00	1.04E+01

Source: 6

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	4.13E-01	4.15E-01	4.15E-01	4.13E-01	4.24E-01	7.61E-01	7.94E-01	7.66E-01	7.61E-01	7.95E-01	5.96E+00
U-235											
U-235	1.94E-02	2.00E-02	1.98E-02	1.95E-02	2.23E-02	3.58E-02	4.46E-02	3.70E-02	3.58E-02	4.47E-02	2.99E-01
U-234											
U-234	4.70E-01	4.70E-01	4.70E-01	4.70E-01	4.70E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	8.62E-01	6.66E+00

Source: 7

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	6.68E-01	6.68E-01	6.69E-01	6.69E-01	6.70E-01	1.17E+00	1.17E+00	1.19E+00	1.19E+00	1.19E+00	9.25E+00
U-235											
U-235	3.14E-02	3.14E-02	3.17E-02	3.18E-02	3.20E-02	5.59E-02	5.59E-02	5.97E-02	6.00E-02	6.00E-02	4.50E-01
U-234											
U-234	7.59E-01	7.59E-01	7.59E-01	7.59E-01	7.59E-01	1.33E+00	1.33E+00	1.33E+00	1.33E+00	1.33E+00	1.04E+01

RESRAD-BUILD
Title : Youngs

Input File : C:\RESBLD\JYD&D2J.INEvaluation Time: 0.00000 years

Source: 8

Source: 9

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	1.67E+00	1.67E+00	1.70E+00	1.67E+00	1.67E+00	1.44E+00	1.43E+00	1.43E+00	1.42E+00	1.42E+00	1.55E+01
U-235											
U-235	8.25E-02	8.25E-02	8.81E-02	8.25E-02	8.25E-02	7.21E-02	7.00E-02	7.03E-02	6.81E-02	6.77E-02	7.66E-01
U-234											
U-234	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.88E+00	1.61E+00	1.61E+00	1.61E+00	1.61E+00	1.74E+01	

Source: 10

Title : Youngs

Input File : C:\RESBLD\JYD&D2J.INE Evaluation Time: 0.820000E-01 years

Assessment for Time: 2
Time =8.20E-02 yr

Source Information

Source: 1

Location:: Room : 1 x: 18.20 y: 0.00 z: 4.40 [m]
Geometry:: Type: Area Area:3.22E+02 [m²] Direction: y
Pathway ::
Direct Ingestion Rate: 1.000E-07 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 1.000E-02
Time to Remove: 3.000E+01 [day]

Contamination::	Nuclide	Concentration [pCi/m ²]
	U-238	2.129E+06
	U-235	9.900E+04
	U-234	2.237E+06
	PA-231	1.717E-01
	TH-230	1.652E+00
	AC-227	2.247E-04
	RA-226	2.937E-05
	PB-210	2.499E-08

**RESRAD-BLTD Program output, Version 2.10 06/27/01 09:15 Page: 2- 2
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.INEvaluation Time: 0.820000E-01 years

Source: 2

Location:: Room : 1 x: 0.00 y: 9.15 z: 4.40 [m]
Geometry:: Type: Area Area:1.61E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 2.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.129E+06
 U-235 9.900E+04
 U-234 2.237E+06
 PA-231 1.717E-01
 TH-230 1.652E+00
 AC-227 2.247E-04
 RA-226 2.937E-05
 PB-210 2.499E-08

Source: 3

Location:: Room : 1 x: 18.30 y: 18.30 z: 4.40 [m]
Geometry:: Type: Area Area:3.22E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 1.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.129E+06
 U-235 9.900E+04
 U-234 2.237E+06
 PA-231 1.717E-01
 TH-230 1.652E+00
 AC-227 2.247E-04
 RA-226 2.937E-05
 PB-210 2.499E-08

Title : Youngs

Input File : C:\RESBLD\JYD&D2J.INEvaluation Time: 0.820000E-01 years

Source: 4

Location:: Room : 1 x: 36.60 y: 9.15 z: 4.40 [m]
Geometry:: Type: Area Area:1.61E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 2.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.129E+06
	U-235	9.900E+04
	U-234	2.237E+06
	PA-231	1.717E-01
	TH-230	1.652E+00
	AC-227	2.247E-04
	RA-226	2.937E-05
	PB-210	2.499E-08

Source: 5

Location:: Room : 2 x: 15.25 y: 18.30 z: 5.20 [m]
Geometry:: Type: Area Area:3.15E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 1.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.129E+06
	U-235	9.900E+04
	U-234	2.237E+06
	PA-231	1.717E-01
	TH-230	1.652E+00
	AC-227	2.247E-04
	RA-226	2.937E-05
	PB-210	2.499E-08

** RESRAD-BUILD Program Output, Version 2.10 06/27/97 09:43 Page: 2- 1 : 31 **
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.INE evaluation Time: 0.820000E-01 years

Source: 6

Location:: Room : 2 x: 0.00 y: 27.80 z: 5.18 [m]
Geometry:: Type: Area Area:1.95E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 2.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.129E+06
 U-235 9.900E+04
 U-234 2.237E+06
 PA-231 1.717E-01
 TH-230 1.653E+00
 AC-227 2.247E-04
 RA-226 2.937E-05
 PB-210 2.499E-08

Source: 7

Location:: Room : 2 x: 15.25 y: 37.20 z: 5.18 [m]
Geometry:: Type: Area Area:3.15E+02 [m2] Direction: y
Pathway ::
 Direct Ingestion Rate: 1.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination:: Nuclide Concentration
 [pCi/m2]
 U-238 2.129E+06
 U-235 9.900E+04
 U-234 2.237E+06
 PA-231 1.717E-01
 TH-230 1.652E+00
 AC-227 2.247E-04
 RA-226 2.937E-05
 PB-210 2.499E-08

* RESRAD-BUILD Program Output, Version 2.10 06/27/97 09:43 Page: 2- 1 : 32 **
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.INE
Evaluation Time: 0.820000E-01 years

Source: 8
Location:: Room : 2 x: 30.50 y: 27.80 z: 5.18 [m]
Geometry:: Type: Area Area:1.95E+02 [m2] Direction: x
Pathway ::
 Direct Ingestion Rate: 2.000E-07 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.129E+06
	U-235	9.900E+04
	U-234	2.237E+06
	PA-231	1.717E-01
	TH-230	1.653E+00
	AC-227	2.247E-04
	RA-226	2.937E-05
	PB-210	2.499E-08

Source: 9
Location:: Room : 1 x: 18.30 y: 9.15 z: 8.80 [m]
Geometry:: Type: Area Area:6.70E+02 [m2] Direction: z
Pathway ::
 Direct Ingestion Rate: 5.000E-08 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.129E+06
	U-235	9.900E+04
	U-234	2.237E+06
	PA-231	1.717E-01
	TH-230	1.653E+00
	AC-227	2.247E-04
	RA-226	2.937E-05
	PB-210	2.499E-08

** RESRAD-BUILD Program output, version 2.10 06/27/97 09:45 Page: 2- 1 : 33 **
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.INEvaluation Time: 0.820000E-01 years

Source: 10

Location:: Room : 2 x: 15.25 y: 27.80 z: 10.36 [m]
Geometry:: Type: Area Area: 5.76E+02 [m2] Direction: z
Pathway ::
 Direct Ingestion Rate: 6.000E-08 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 1.000E-02
 Time to Remove: 3.000E+01 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	U-238	2.129E+06
	U-235	9.900E+04
	U-234	2.237E+06
	PA-231	1.717E-01
	TH-230	1.652E+00
	AC-227	2.247E-04
	RA-226	2.937E-05
	PB-210	2.499E-08

** RESRAD-BUILD Program Output, Version 2.10 06/27/97 09:43 Page: 2- 2 : 34 **
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.INE Evaluation Time: 0.820000E-01 years

RESRAD-BUILD Dose Tables

Receptor Point-Source Doses

[mrem]

	Source 1	Source 2	Source 3	Source 4	Source 5	Source 6	Source 7	Source 8	Source 9	Source 10	Total
Receptor 1	1.7E+00	8.4E-01	1.7E+00	8.8E-01	1.5E+00	9.0E-01	1.5E+00	9.0E-01	3.5E+00	2.7E+00	1.6E+01
Receptor 2	1.7E+00	8.8E-01	1.7E+00	8.4E-01	1.5E+00	9.0E-01	1.5E+00	9.0E-01	3.5E+00	2.7E+00	1.6E+01
Receptor 3	1.7E+00	8.4E-01	1.7E+00	8.4E-01	1.5E+00	9.0E-01	1.5E+00	9.1E-01	3.5E+00	2.7E+00	1.6E+01
Receptor 4	1.7E+00	8.4E-01	1.7E+00	8.8E-01	1.5E+00	9.0E-01	1.5E+00	9.2E-01	3.5E+00	2.7E+00	1.6E+01
Receptor 5	1.7E+00	8.8E-01	1.7E+00	8.4E-01	1.5E+00	9.2E-01	1.5E+00	9.0E-01	3.5E+00	2.7E+00	1.6E+01
Receptor 6	1.5E+00	7.4E-01	1.5E+00	7.5E-01	2.4E+00	1.5E+00	2.4E+00	1.5E+00	3.1E+00	4.4E+00	2.0E+01
Receptor 7	1.5E+00	7.6E-01	1.5E+00	7.4E-01	2.4E+00	1.5E+00	2.4E+00	1.5E+00	3.1E+00	4.4E+00	2.0E+01
Receptor 8	1.5E+00	7.5E-01	1.5E+00	7.4E-01	2.4E+00	1.5E+00	2.4E+00	1.5E+00	3.1E+00	4.5E+00	2.0E+01
Receptor 9	1.5E+00	7.4E-01	1.5E+00	7.5E-01	2.4E+00	1.5E+00	2.4E+00	1.5E+00	3.1E+00	4.4E+00	2.0E+01
Receptor 10	1.5E+00	7.5E-01	1.5E+00	7.4E-01	2.4E+00	1.5E+00	2.4E+00	1.5E+00	3.1E+00	4.4E+00	2.0E+01
Total	1.6E+01	8.0E+00	1.6E+01	8.0E+00	2.0E+01	1.2E+01	1.9E+01	1.2E+01	3.3E+01	3.6E+01	1.8E+02

Title : Youngs

Input File : C:\RESBLD\JYD&D2J.INEvaluation Time: 0.820000E-01 years

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.76E-02	5.59E-07	1.97E-07	1.67E+00	1.83E-13	3.11E-04
2	1.81E-02	5.59E-07	1.97E-07	1.67E+00	1.83E-13	3.11E-04
3	2.78E-02	5.59E-07	1.97E-07	1.67E+00	1.83E-13	3.11E-04
4	7.38E-03	5.59E-07	1.97E-07	1.67E+00	1.83E-13	3.11E-04
5	7.46E-03	5.59E-07	1.97E-07	1.67E+00	1.83E-13	3.11E-04
6	5.82E-03	4.86E-07	1.75E-07	1.49E+00	2.11E-13	8.08E-05
7	4.78E-03	4.86E-07	1.75E-07	1.49E+00	2.11E-13	8.08E-05
8	3.83E-03	4.86E-07	1.75E-07	1.49E+00	2.11E-13	8.08E-05
9	2.32E-03	4.86E-07	1.75E-07	1.49E+00	2.11E-13	8.08E-05
10	2.10E-03	4.86E-07	1.75E-07	1.49E+00	2.11E-13	8.08E-05
Total	9.71E-02	5.22E-06	1.86E-06	1.58E+01	1.97E-12	1.96E-03

Source: 2

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.28E-03	2.80E-07	9.83E-08	8.34E-01	9.14E-14	2.65E-04
2	4.08E-02	2.80E-07	9.83E-08	8.34E-01	9.14E-14	2.65E-04
3	4.76E-03	2.80E-07	9.83E-08	8.34E-01	9.14E-14	2.65E-04
4	1.28E-03	2.80E-07	9.83E-08	8.34E-01	9.14E-14	2.65E-04
5	4.08E-02	2.80E-07	9.83E-08	8.34E-01	9.14E-14	2.65E-04
6	1.74E-03	2.43E-07	8.76E-08	7.43E-01	1.05E-13	4.04E-05
7	1.31E-02	2.43E-07	8.76E-08	7.43E-01	1.05E-13	4.04E-05
8	3.08E-03	2.43E-07	8.76E-08	7.43E-01	1.05E-13	4.04E-05
9	1.16E-03	2.43E-07	8.76E-08	7.43E-01	1.05E-13	4.04E-05
10	3.04E-03	2.43E-07	8.76E-08	7.43E-01	1.05E-13	4.04E-05
Total	1.11E-01	2.61E-06	9.30E-07	7.88E+00	9.84E-13	1.53E-03

Source: 3

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	7.42E-03	5.59E-07	1.97E-07	1.67E+00	1.83E-13	3.11E-04
2	7.42E-03	5.59E-07	1.97E-07	1.67E+00	1.83E-13	3.11E-04
3	2.78E-02	5.59E-07	1.97E-07	1.67E+00	1.83E-13	3.11E-04
4	1.78E-02	5.59E-07	1.97E-07	1.67E+00	1.83E-13	3.11E-04
5	1.78E-02	5.59E-07	1.97E-07	1.67E+00	1.83E-13	3.11E-04
6	5.14E-02	4.86E-07	1.75E-07	1.49E+00	2.11E-13	8.08E-05
7	1.78E-02	4.86E-07	1.75E-07	1.49E+00	2.11E-13	8.08E-05
8	2.54E-02	4.86E-07	1.75E-07	1.49E+00	2.11E-13	8.08E-05
9	9.50E-03	4.86E-07	1.75E-07	1.49E+00	2.11E-13	8.08E-05
10	7.08E-03	4.86E-07	1.75E-07	1.49E+00	2.11E-13	8.08E-05
Total	1.89E-01	5.22E-06	1.86E-06	1.58E+01	1.97E-12	1.96E-03

Title : Youngs

Input File : C:\RESBLD\JYD&D2J.INE Evaluation Time: 0.820000E-01 years

Source: 4

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	4.08E-02	2.80E-07	9.83E-08	8.34E-01	9.14E-14	2.65E-04
2	1.28E-03	2.80E-07	9.83E-08	8.34E-01	9.14E-14	2.65E-04
3	4.76E-03	2.80E-07	9.83E-08	8.34E-01	9.14E-14	2.65E-04
4	4.08E-02	2.80E-07	9.83E-08	8.34E-01	9.14E-14	2.65E-04
5	1.28E-03	2.80E-07	9.83E-08	8.34E-01	9.14E-14	2.65E-04
6	8.03E-03	2.43E-07	8.76E-08	7.43E-01	1.05E-13	4.04E-05
7	1.18E-03	2.43E-07	8.76E-08	7.43E-01	1.05E-13	4.04E-05
8	2.10E-03	2.43E-07	8.76E-08	7.43E-01	1.05E-13	4.04E-05
9	2.69E-03	2.43E-07	8.76E-08	7.43E-01	1.05E-13	4.04E-05
10	8.65E-04	2.43E-07	8.76E-08	7.43E-01	1.05E-13	4.04E-05
Total	1.04E-01	2.61E-06	9.30E-07	7.88E+00	9.84E-13	1.53E-03

Source: 5

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	6.03E-03	4.88E-07	1.72E-07	1.46E+00	2.03E-13	7.92E-05
2	8.46E-03	4.88E-07	1.72E-07	1.46E+00	2.03E-13	7.92E-05
3	2.58E-02	4.88E-07	1.72E-07	1.46E+00	2.03E-13	7.92E-05
4	1.14E-02	4.88E-07	1.72E-07	1.46E+00	2.03E-13	7.92E-05
5	2.74E-02	4.88E-07	1.72E-07	1.46E+00	2.03E-13	7.92E-05
6	2.74E-02	7.90E-07	2.85E-07	2.41E+00	2.94E-13	3.47E-04
7	2.74E-02	7.90E-07	2.85E-07	2.41E+00	2.94E-13	3.47E-04
8	2.53E-02	7.90E-07	2.85E-07	2.41E+00	2.94E-13	3.47E-04
9	8.03E-03	7.90E-07	2.85E-07	2.41E+00	2.94E-13	3.47E-04
10	8.03E-03	7.90E-07	2.85E-07	2.41E+00	2.94E-13	3.47E-04
Total	1.75E-01	6.39E-06	2.28E-06	1.94E+01	2.49E-12	2.13E-03

Source: 6

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.05E-03	3.02E-07	1.06E-07	9.01E-01	1.26E-13	4.90E-05
2	3.72E-03	3.02E-07	1.06E-07	9.01E-01	1.26E-13	4.90E-05
3	3.04E-03	3.02E-07	1.06E-07	9.01E-01	1.26E-13	4.90E-05
4	1.40E-03	3.02E-07	1.06E-07	9.01E-01	1.26E-13	4.90E-05
5	1.47E-02	3.02E-07	1.06E-07	9.01E-01	1.26E-13	4.90E-05
6	2.33E-03	4.89E-07	1.76E-07	1.49E+00	1.82E-13	3.48E-04
7	4.35E-02	4.89E-07	1.76E-07	1.49E+00	1.82E-13	3.48E-04
8	7.90E-03	4.89E-07	1.76E-07	1.49E+00	1.82E-13	3.48E-04
9	2.34E-03	4.89E-07	1.76E-07	1.49E+00	1.82E-13	3.48E-04
10	4.42E-02	4.89E-07	1.76E-07	1.49E+00	1.82E-13	3.48E-04
Total	1.24E-01	3.95E-06	1.41E-06	1.20E+01	1.54E-12	1.98E-03

** RESRAD-BUILD Program output, Version 2.10 06/27/97 09:43 Page: 2- 3 : 37 **
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.INEvaluation Time: 0.820000E-01 years

Source: 7

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.92E-03	4.88E-07	1.72E-07	1.46E+00	2.03E-13	7.92E-05
2	2.17E-03	4.88E-07	1.72E-07	1.46E+00	2.03E-13	7.92E-05
3	3.66E-03	4.88E-07	1.72E-07	1.46E+00	2.03E-13	7.92E-05
4	3.94E-03	4.88E-07	1.72E-07	1.46E+00	2.03E-13	7.92E-05
5	4.93E-03	4.88E-07	1.72E-07	1.46E+00	2.03E-13	7.92E-05
6	8.03E-03	7.90E-07	2.85E-07	2.41E+00	2.94E-13	3.47E-04
7	8.03E-03	7.90E-07	2.85E-07	2.41E+00	2.94E-13	3.47E-04
8	2.57E-02	7.90E-07	2.85E-07	2.41E+00	2.94E-13	3.47E-04
9	2.74E-02	7.90E-07	2.85E-07	2.41E+00	2.94E-13	3.47E-04
10	2.74E-02	7.90E-07	2.85E-07	2.41E+00	2.94E-13	3.47E-04
Total	1.13E-01	6.39E-06	2.28E-06	1.94E+01	2.49E-12	2.13E-03

Source: 8

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	3.72E-03	3.02E-07	1.06E-07	9.01E-01	1.26E-13	4.90E-05
2	1.41E-03	3.02E-07	1.06E-07	9.01E-01	1.26E-13	4.90E-05
3	4.45E-03	3.02E-07	1.06E-07	9.01E-01	1.26E-13	4.90E-05
4	1.47E-02	3.02E-07	1.06E-07	9.01E-01	1.26E-13	4.90E-05
5	2.07E-03	3.02E-07	1.06E-07	9.01E-01	1.26E-13	4.90E-05
6	4.35E-02	4.89E-07	1.76E-07	1.49E+00	1.82E-13	3.48E-04
7	2.33E-03	4.89E-07	1.76E-07	1.49E+00	1.82E-13	3.48E-04
8	7.90E-03	4.89E-07	1.76E-07	1.49E+00	1.82E-13	3.48E-04
9	4.42E-02	4.89E-07	1.76E-07	1.49E+00	1.82E-13	3.48E-04
10	2.34E-03	4.89E-07	1.76E-07	1.49E+00	1.82E-13	3.48E-04
Total	1.27E-01	3.95E-06	1.41E-06	1.20E+01	1.54E-12	1.98E-03

Source: 9

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	2.68E-02	1.16E-06	4.09E-07	3.47E+00	3.80E-13	4.18E-04
2	2.68E-02	1.16E-06	4.09E-07	3.47E+00	3.80E-13	4.18E-04
3	5.32E-02	1.16E-06	4.09E-07	3.47E+00	3.80E-13	4.18E-04
4	2.68E-02	1.16E-06	4.09E-07	3.47E+00	3.80E-13	4.18E-04
5	2.68E-02	1.16E-06	4.09E-07	3.47E+00	3.80E-13	4.18E-04
6	2.99E-02	1.01E-06	3.64E-07	3.09E+00	4.39E-13	1.68E-04
7	2.02E-02	1.01E-06	3.64E-07	3.09E+00	4.39E-13	1.68E-04
8	2.15E-02	1.01E-06	3.64E-07	3.09E+00	4.39E-13	1.68E-04
9	1.10E-02	1.01E-06	3.64E-07	3.09E+00	4.39E-13	1.68E-04
10	9.10E-03	1.01E-06	3.64E-07	3.09E+00	4.39E-13	1.68E-04
Total	2.52E-01	1.09E-05	3.87E-06	3.28E+01	4.10E-12	2.93E-03

** RESRAD-BUILD Program Output, Version 2.10 06/27/97 09:43 Page: 2- 3 : 38 **
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.INE Evaluation Time: 0.820000E-01 years

Source: 10
Receptor External Deposition Immersion Inhalation Radon Ingestion
1 6.76E-03 8.92E-07 3.14E-07 2.66E+00 3.71E-13 1.45E-04
2 8.34E-03 8.92E-07 3.14E-07 2.66E+00 3.71E-13 1.45E-04
3 1.64E-02 8.92E-07 3.14E-07 2.66E+00 3.71E-13 1.45E-04
4 1.25E-02 8.92E-07 3.14E-07 2.66E+00 3.71E-13 1.45E-04
5 1.84E-02 8.92E-07 3.14E-07 2.66E+00 3.71E-13 1.45E-04
6 2.46E-02 1.44E-06 5.21E-07 4.42E+00 5.38E-13 4.76E-04
7 2.46E-02 1.44E-06 5.21E-07 4.42E+00 5.38E-13 4.76E-04
8 4.01E-02 1.44E-06 5.21E-07 4.42E+00 5.38E-13 4.76E-04
9 2.46E-02 1.44E-06 5.21E-07 4.42E+00 5.38E-13 4.76E-04
10 2.46E-02 1.44E-06 5.21E-07 4.42E+00 5.38E-13 4.76E-04
Total 2.01E-01 1.17E-05 4.17E-06 3.54E+01 4.55E-12 3.11E-03

** RESRAD-BUILD Program Output, version 2.10 06/27/97 09:45 Page: 2- 4 : 39 **
 Title : Youngs
 Input File : C:\RESBLD\JYD&D2J.INEvaluation Time: 0.820000E-01 years

Nuclide Detail of Doses

[mrem]

Source: 1

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	7.77E-01	7.78E-01	7.85E-01	7.69E-01	7.69E-01	6.84E-01	6.83E-01	6.83E-01	6.81E-01	6.81E-01	7.29E+00
U-234	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.71E-07	1.71E-07	1.71E-07	1.71E-07	1.71E-07	1.81E-06
TH-230	1.74E-13	1.74E-13	1.74E-13	1.74E-13	1.74E-13	1.55E-13	1.55E-13	1.55E-13	1.55E-13	1.55E-13	1.65E-12
RA-226	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
PB-210	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
U-235											
U-235	3.92E-02	3.93E-02	4.13E-02	3.70E-02	3.71E-02	3.28E-02	3.26E-02	3.24E-02	3.21E-02	3.20E-02	3.56E-01
PA-231	6.69E-07	6.69E-07	6.70E-07	6.68E-07	6.68E-07	5.95E-07	5.95E-07	5.94E-07	5.94E-07	5.94E-07	6.32E-06
AC-227	4.52E-09	4.52E-09	4.53E-09	4.51E-09	4.51E-09	4.02E-09	4.02E-09	4.01E-09	4.01E-09	4.01E-09	4.27E-08
U-234											
U-234	8.69E-01	8.69E-01	8.69E-01	8.69E-01	8.69E-01	7.74E-01	7.74E-01	7.74E-01	7.74E-01	7.74E-01	8.22E+00
TH-230	1.58E-06	1.58E-06	1.58E-06	1.58E-06	1.58E-06	1.41E-06	1.41E-06	1.41E-06	1.41E-06	1.41E-06	1.49E-05
RA-226	1.18E-11	1.22E-11	1.80E-11	5.51E-12	5.56E-12	4.55E-12	3.89E-12	3.34E-12	2.39E-12	2.24E-12	6.95E-11
PB-210	1.65E-15	1.65E-15	1.66E-15	1.64E-15	1.64E-15	1.43E-15	1.43E-15	1.43E-15	1.43E-15	1.43E-15	1.54E-14

Source: 2

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	3.83E-01	4.14E-01	3.86E-01	3.83E-01	4.14E-01	3.41E-01	3.50E-01	3.42E-01	3.41E-01	3.42E-01	3.70E+00
U-234	9.60E-08	9.60E-08	9.60E-08	9.60E-08	9.60E-08	8.55E-08	8.55E-08	8.55E-08	8.55E-08	8.55E-08	9.07E-07
TH-230	8.72E-14	8.72E-14	8.72E-14	8.72E-14	8.72E-14	7.76E-14	7.76E-14	7.76E-14	7.76E-14	7.76E-14	8.24E-13
RA-226	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
PB-210	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
U-235											
U-235	1.80E-02	2.63E-02	1.87E-02	1.80E-02	2.63E-02	1.62E-02	1.85E-02	1.64E-02	1.60E-02	1.64E-02	1.91E-01
PA-231	3.34E-07	3.37E-07	3.34E-07	3.34E-07	3.37E-07	2.97E-07	2.98E-07	2.97E-07	2.97E-07	2.97E-07	3.16E-06
AC-227	2.25E-09	2.30E-09	2.26E-09	2.25E-09	2.30E-09	2.01E-09	2.02E-09	2.01E-09	2.01E-09	2.01E-09	2.14E-08
U-234											
U-234	4.35E-01	4.35E-01	4.35E-01	4.35E-01	4.35E-01	3.87E-01	3.87E-01	3.87E-01	3.87E-01	3.87E-01	4.11E+00
TH-230	7.91E-07	7.91E-07	7.91E-07	7.91E-07	7.91E-07	7.04E-07	7.04E-07	7.04E-07	7.04E-07	7.04E-07	7.47E-06
RA-226	1.30E-12	2.55E-11	3.45E-12	1.30E-12	2.55E-11	1.55E-12	8.42E-12	2.34E-12	1.17E-12	2.28E-12	7.28E-11
PB-210	8.37E-16	8.66E-16	8.39E-16	8.37E-16	8.66E-16	7.17E-16	7.25E-16	7.18E-16	7.16E-16	7.18E-16	7.84E-15

Title : Youngs

Input File : C:\RESBLD\JYD&D2J.INE Evaluation Time: 0.820000E-01 years

Source: 3

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	7.69E-01	7.69E-01	7.85E-01	7.77E-01	7.77E-01	7.20E-01	6.94E-01	7.00E-01	6.87E-01	6.85E-01	7.36E+00
U-234	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.71E-07	1.71E-07	1.71E-07	1.71E-07	1.71E-07	1.81E-06
TH-230	1.74E-13	1.74E-13	1.74E-13	1.74E-13	1.74E-13	1.55E-13	1.55E-13	1.55E-13	1.55E-13	1.55E-13	1.65E-12
RA-226	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
PB-210	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
U-235											
U-235	3.70E-02	3.70E-02	4.13E-02	3.92E-02	3.92E-02	4.24E-02	3.53E-02	3.69E-02	3.36E-02	3.31E-02	3.75E-01
PA-231	6.68E-07	6.68E-07	6.70E-07	6.69E-07	6.69E-07	5.98E-07	5.96E-07	5.96E-07	5.95E-07	5.95E-07	6.32E-06
AC-227	4.51E-09	4.51E-09	4.53E-09	4.52E-09	4.52E-09	4.07E-09	4.03E-09	4.04E-09	4.02E-09	4.02E-09	4.28E-08
U-234											
U-234	8.69E-01	8.69E-01	8.69E-01	8.69E-01	8.69E-01	7.74E-01	7.74E-01	7.74E-01	7.74E-01	7.74E-01	8.22E+00
TH-230	1.58E-06	1.58E-06	1.58E-06	1.58E-06	1.58E-06	1.41E-06	1.41E-06	1.41E-06	1.41E-06	1.41E-06	1.49E-05
RA-226	5.54E-12	5.54E-12	1.80E-11	1.20E-11	1.20E-11	3.29E-11	1.19E-11	1.65E-11	6.80E-12	5.28E-12	1.27E-10
PB-210	1.64E-15	1.64E-15	1.66E-15	1.65E-15	1.65E-15	1.47E-15	1.44E-15	1.45E-15	1.44E-15	1.44E-15	1.55E-14

Source: 4

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	4.14E-01	3.83E-01	3.86E-01	4.14E-01	3.83E-01	3.46E-01	3.41E-01	3.41E-01	3.42E-01	3.41E-01	3.69E+00
U-234	9.60E-08	9.60E-08	9.60E-08	9.60E-08	9.60E-08	8.55E-08	8.55E-08	8.55E-08	8.55E-08	8.55E-08	9.07E-07
TH-230	8.72E-14	8.72E-14	8.72E-14	8.72E-14	8.72E-14	7.76E-14	7.76E-14	7.76E-14	7.76E-14	7.76E-14	8.24E-13
RA-226	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
PB-210	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
U-235											
U-235	2.63E-02	1.80E-02	1.87E-02	2.63E-02	1.80E-02	1.75E-02	1.60E-02	1.62E-02	1.64E-02	1.60E-02	1.90E-01
PA-231	3.37E-07	3.34E-07	3.34E-07	3.37E-07	3.34E-07	2.98E-07	2.97E-07	2.97E-07	2.97E-07	2.97E-07	3.16E-06
AC-227	2.30E-09	2.25E-09	2.26E-09	2.30E-09	2.25E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.14E-08
U-234											
U-234	4.35E-01	4.35E-01	4.35E-01	4.35E-01	4.35E-01	3.87E-01	3.87E-01	3.87E-01	3.87E-01	3.87E-01	4.11E+00
TH-230	7.91E-07	7.91E-07	7.91E-07	7.91E-07	7.91E-07	7.04E-07	7.04E-07	7.04E-07	7.04E-07	7.04E-07	7.47E-06
RA-226	2.55E-11	1.30E-12	3.45E-12	2.55E-11	1.30E-12	5.33E-12	1.20E-12	1.75E-12	2.06E-12	9.94E-13	6.83E-11
PB-210	8.66E-16	8.37E-16	8.39E-16	8.66E-16	8.37E-16	7.22E-16	7.16E-16	7.17E-16	7.17E-16	7.16E-16	7.83E-15

** RESRAD-BUILD Program Output, Version 2.10 06/27/97 09:45 Page: 2- 41
Title : Youngs
Input File : C:\RESBLD\JYD&D2J.INEvaluation Time: 0.820000E-01 years

Source: 5

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238	6.71E-01	6.73E-01	6.86E-01	6.75E-01	6.88E-01	1.13E+00	1.13E+00	1.13E+00	1.11E+00	1.11E+00	8.99E+00
U-234	1.68E-07	1.68E-07	1.68E-07	1.68E-07	1.68E-07	2.78E-07	2.78E-07	2.78E-07	2.78E-07	2.78E-07	2.23E-06
TH-230	1.52E-13	1.52E-13	1.52E-13	1.52E-13	1.52E-13	2.52E-13	2.52E-13	2.52E-13	2.52E-13	2.52E-13	2.02E-12
RA-226	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
PB-210	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
U-235											
U-235	3.22E-02	3.27E-02	3.64E-02	3.34E-02	3.67E-02	5.71E-02	5.71E-02	5.67E-02	5.31E-02	5.31E-02	4.49E-01
PA-231	5.83E-07	5.83E-07	5.84E-07	5.83E-07	5.85E-07	9.69E-07	9.69E-07	9.69E-07	9.67E-07	9.67E-07	7.76E-06
AC-227	3.94E-09	3.94E-09	3.96E-09	3.94E-09	3.96E-09	6.55E-09	6.55E-09	6.55E-09	6.53E-09	6.53E-09	5.25E-08
U-234											
U-234	7.59E-01	7.59E-01	7.59E-01	7.59E-01	7.59E-01	1.26E+00	1.26E+00	1.26E+00	1.26E+00	1.26E+00	1.01E+01
TH-230	1.38E-06	1.38E-06	1.38E-06	1.38E-06	1.38E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	1.83E-05
RA-226	4.59E-12	6.11E-12	1.67E-11	7.91E-12	1.79E-11	1.84E-11	1.84E-11	1.69E-11	6.35E-12	6.35E-12	1.20E-10
PB-210	1.41E-15	1.41E-15	1.42E-15	1.41E-15	1.42E-15	2.38E-15	2.38E-15	2.38E-15	2.36E-15	2.36E-15	1.89E-14

Source: 6

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	4.13E-01	4.15E-01	4.15E-01	4.13E-01	4.24E-01	6.86E-01	7.18E-01	6.91E-01	6.86E-01	7.19E-01	5.58E+00
U-234	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.72E-07	1.72E-07	1.72E-07	1.72E-07	1.72E-07	1.38E-06
TH-230	9.42E-14	9.42E-14	9.42E-14	9.42E-14	9.42E-14	1.56E-13	1.56E-13	1.56E-13	1.56E-13	1.56E-13	1.25E-12
RA-226	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
PB-210	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
U-235											
U-235	1.94E-02	2.00E-02	1.98E-02	1.95E-02	2.23E-02	3.23E-02	4.10E-02	3.35E-02	3.23E-02	4.11E-02	2.81E-01
PA-231	3.61E-07	3.61E-07	3.61E-07	3.61E-07	3.62E-07	5.99E-07	6.02E-07	5.99E-07	5.99E-07	6.02E-07	4.81E-06
AC-227	2.43E-09	2.44E-09	2.44E-09	2.43E-09	2.45E-09	4.04E-09	4.09E-09	4.05E-09	4.04E-09	4.09E-09	3.25E-08
U-234											
U-234	4.70E-01	4.70E-01	4.70E-01	4.70E-01	4.70E-01	7.79E-01	7.79E-01	7.79E-01	7.79E-01	7.79E-01	6.24E+00
TH-230	8.54E-07	8.54E-07	8.54E-07	8.54E-07	8.54E-07	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.14E-05
RA-226	1.20E-12	2.79E-12	2.42E-12	1.44E-12	9.58E-12	2.34E-12	2.76E-11	5.75E-12	2.34E-12	2.80E-11	8.35E-11
PB-210	8.69E-16	8.71E-16	8.70E-16	8.69E-16	8.79E-16	1.48E-15	1.51E-15	1.49E-15	1.48E-15	1.51E-15	1.18E-14

Title : Youngs

Input File : C:\RESBLD\JYD&D2J.INE Evaluation Time: 0.820000E-01 years

Source: 7

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	6.68E-01	6.68E-01	6.69E-01	6.69E-01	6.70E-01	1.11E+00	1.11E+00	1.13E+00	1.13E+00	1.13E+00	8.95E+00
U-234	1.68E-07	1.68E-07	1.68E-07	1.68E-07	1.68E-07	2.78E-07	2.78E-07	2.78E-07	2.78E-07	2.78E-07	2.23E-06
TH-230	1.52E-13	1.52E-13	1.52E-13	1.52E-13	1.52E-13	2.52E-13	2.52E-13	2.52E-13	2.52E-13	2.52E-13	2.02E-12
RA-226	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
PB-210	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
U-235											
U-235	3.14E-02	3.14E-02	3.17E-02	3.18E-02	3.20E-02	5.31E-02	5.31E-02	5.68E-02	5.71E-02	5.71E-02	4.35E-01
PA-231	5.82E-07	5.83E-07	5.83E-07	5.83E-07	5.83E-07	9.67E-07	9.67E-07	9.69E-07	9.69E-07	9.69E-07	7.75E-06
AC-227	3.93E-09	3.93E-09	3.93E-09	3.93E-09	3.94E-09	6.53E-09	6.53E-09	6.55E-09	6.55E-09	6.55E-09	5.24E-08
U-234											
U-234	7.59E-01	7.59E-01	7.59E-01	7.59E-01	7.59E-01	1.26E+00	1.26E+00	1.26E+00	1.26E+00	1.26E+00	1.01E+01
TH-230	1.38E-06	1.38E-06	1.38E-06	1.38E-06	1.38E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	1.83E-05
RA-226	2.10E-12	2.26E-12	3.21E-12	3.33E-12	3.97E-12	6.35E-12	6.35E-12	1.72E-11	1.84E-11	1.84E-11	8.16E-11
PB-210	1.40E-15	1.40E-15	1.40E-15	1.41E-15	1.41E-15	2.36E-15	2.36E-15	2.38E-15	2.38E-15	2.38E-15	1.89E-14

Source: 8

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	4.15E-01	4.13E-01	4.16E-01	4.24E-01	4.14E-01	7.18E-01	6.86E-01	6.91E-01	7.19E-01	6.86E-01	5.58E+00
U-234	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.72E-07	1.72E-07	1.72E-07	1.72E-07	1.72E-07	1.38E-06
TH-230	9.42E-14	9.42E-14	9.42E-14	9.42E-14	9.42E-14	1.56E-13	1.56E-13	1.56E-13	1.56E-13	1.56E-13	1.25E-12
RA-226	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
PB-210	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
U-235											
U-235	2.00E-02	1.95E-02	2.01E-02	2.23E-02	1.96E-02	4.10E-02	3.23E-02	3.35E-02	4.11E-02	3.23E-02	2.82E-01
PA-231	3.61E-07	3.61E-07	3.61E-07	3.62E-07	3.61E-07	6.02E-07	5.99E-07	5.99E-07	6.02E-07	5.99E-07	4.81E-06
AC-227	2.44E-09	2.43E-09	2.44E-09	2.45E-09	2.44E-09	4.09E-09	4.04E-09	4.05E-09	4.09E-09	4.04E-09	3.25E-08
U-234											
U-234	4.70E-01	4.70E-01	4.70E-01	4.70E-01	4.70E-01	7.79E-01	7.79E-01	7.79E-01	7.79E-01	7.79E-01	6.24E+00
TH-230	8.54E-07	8.54E-07	8.54E-07	8.54E-07	8.54E-07	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.14E-05
RA-226	2.79E-12	1.42E-12	3.26E-12	9.53E-12	1.85E-12	2.76E-11	2.34E-12	5.75E-12	2.80E-11	2.34E-12	8.49E-11
PB-210	8.71E-16	8.69E-16	8.71E-16	8.79E-16	8.69E-16	1.51E-15	1.48E-15	1.49E-15	1.51E-15	1.48E-15	1.18E-14

Title : Youngs

Input File : C:\RESBLD\JYD&D2J.INE valuation Time: 0.820000E-01 years

Source: 9

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	1.61E+00	1.61E+00	1.63E+00	1.61E+00	1.61E+00	1.44E+00	1.43E+00	1.43E+00	1.42E+00	1.42E+00	1.52E+01
U-234	3.99E-07	3.99E-07	3.99E-07	3.99E-07	3.99E-07	3.56E-07	3.56E-07	3.56E-07	3.56E-07	3.56E-07	3.78E-06
TH-230	3.63E-13	3.63E-13	3.63E-13	3.63E-13	3.63E-13	3.23E-13	3.23E-13	3.23E-13	3.23E-13	3.23E-13	3.43E-12
RA-226	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
PB-210	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
U-235											
U-235	7.94E-02	7.94E-02	8.50E-02	7.94E-02	7.94E-02	7.20E-02	7.00E-02	7.02E-02	6.81E-02	6.77E-02	7.51E-01
PA-231	1.39E-06	1.39E-06	1.39E-06	1.39E-06	1.39E-06	1.24E-06	1.24E-06	1.24E-06	1.24E-06	1.24E-06	1.31E-05
AC-227	9.40E-09	9.40E-09	9.43E-09	9.40E-09	9.40E-09	8.38E-09	8.37E-09	8.37E-09	8.36E-09	8.35E-09	8.89E-08
U-234											
U-234	1.81E+00	1.81E+00	1.81E+00	1.81E+00	1.81E+00	1.61E+00	1.61E+00	1.61E+00	1.61E+00	1.61E+00	1.71E+01
TH-230	3.29E-06	3.29E-06	3.29E-06	3.29E-06	3.29E-06	2.93E-06	2.93E-06	2.93E-06	2.93E-06	2.93E-06	3.11E-05
RA-226	1.86E-11	1.86E-11	3.51E-11	1.86E-11	1.86E-11	2.04E-11	1.44E-11	1.51E-11	8.63E-12	7.41E-12	1.75E-10
PB-210	3.40E-15	3.40E-15	3.41E-15	3.40E-15	3.40E-15	3.00E-15	2.99E-15	2.99E-15	2.98E-15	2.98E-15	3.19E-14

Source: 10

Nuclide	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5	Receptor 6	Receptor 7	Receptor 8	Receptor 9	Receptor 10	Total
U-238											
U-238	1.22E+00	1.22E+00	1.23E+00	1.23E+00	1.23E+00	2.04E+00	2.04E+00	2.05E+00	2.04E+00	2.04E+00	1.64E+01
U-234	3.06E-07	3.06E-07	3.06E-07	3.06E-07	3.06E-07	5.08E-07	5.08E-07	5.08E-07	5.08E-07	5.08E-07	4.07E-06
TH-230	2.78E-13	2.78E-13	2.78E-13	2.78E-13	2.78E-13	4.62E-13	4.62E-13	4.62E-13	4.62E-13	4.62E-13	3.70E-12
RA-226	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
PB-210	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
U-235											
U-235	5.81E-02	5.84E-02	6.01E-02	5.93E-02	6.05E-02	9.91E-02	9.91E-02	1.02E-01	9.91E-02	9.91E-02	7.95E-01
PA-231	1.07E-06	1.07E-06	1.07E-06	1.07E-06	1.07E-06	1.77E-06	1.77E-06	1.77E-06	1.77E-06	1.77E-06	1.42E-05
AC-227	7.19E-09	7.20E-09	7.21E-09	7.20E-09	7.21E-09	1.20E-08	1.20E-08	1.20E-08	1.20E-08	1.20E-08	9.58E-08
U-234											
U-234	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	2.30E+00	2.30E+00	2.30E+00	2.30E+00	2.30E+00	1.84E+01
TH-230	2.52E-06	2.52E-06	2.52E-06	2.52E-06	2.52E-06	4.19E-06	4.19E-06	4.19E-06	4.19E-06	4.19E-06	3.35E-05
RA-226	5.70E-12	6.68E-12	1.17E-11	9.28E-12	1.30E-11	1.77E-11	1.77E-11	2.74E-11	1.77E-11	1.77E-11	1.45E-10
PB-210	2.57E-15	2.57E-15	2.58E-15	2.57E-15	2.58E-15	4.31E-15	4.31E-15	4.32E-15	4.31E-15	4.31E-15	3.44E-14

RESRAD-BUILD Dose (Time) Tables

Receptor Doses By Time

[mrem]

Time [yr]

1	0.00E+00	8.20E-02
2	1.66E+01	1.60E+01
3	1.66E+01	1.60E+01
4	1.67E+01	1.60E+01
5	1.67E+01	1.60E+01
6	2.07E+01	2.00E+01
7	2.07E+01	1.99E+01
8	2.07E+01	1.99E+01
9	2.06E+01	1.99E+01
10	2.06E+01	1.99E+01

← 20 mrem/yr. 30 day demolition scenario

Receptor Doses Per Year

[mrem/yr]

Time [yr]

1	0.00E+00	8.20E-02
2	2.03E+02	1.94E+02
3	2.03E+02	1.94E+02
4	2.03E+02	1.95E+02
5	2.03E+02	1.95E+02
6	2.52E+02	2.43E+02
7	2.52E+02	2.43E+02
8	2.52E+02	2.43E+02
9	2.51E+02	2.42E+02
10	2.51E+02	2.42E+02

Appendix C

Landfill Disposal Scenario
RESRAD Reports
and
Technical Support

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RESRAD Landfill Disposal Scenario Technical Support

This Appendix contains technical information developed in support of the RESRAD landfill disposal model displayed in Figure 2-1. Section C.1 discusses key RESRAD hydrologic and chemistry considerations. Computer printouts for the RESRAD simulations (Cases A, B, and C) and the U.S. Environmental Protection Agency (EPA) HELP Model (EPA 1995) can be found in Section C.2.

C.1 Evapotranspiration-Infiltration and Leaching

Evapotranspiration-Infiltration

In developing the RESRAD landfill disposal model for the MS-00685 Mexican Hat building debris, regional climatic information was used to emulate environmental conditions typical of the southwest United States because it was reliable. Furthermore, RESRAD default in-situ chemistry factors were used because reliable site-specific information about chemistry factors was not available. These two elements, combined with the basic landfill configuration, influence the radionuclide leach rate, which in turn affects the groundwater exposure pathway. The computed groundwater consumption effective dose equivalent (EDE) is inversely related to evaporation. The higher the evapotranspiration rate (i.e., water leaving the system through evaporation and transpiration), the lower the leachate production and, consequently, the shorter the estimated radionuclide travel time to the receptor well. In developing the model, the intent was to avoid significantly underestimating the leaching aspect of the groundwater pathway evaluation, but at the same time, to express the distinctive characteristics of the semi-arid southwestern climate (total precipitation in the Monticello area is about 0.46 meters/year [DOE 1990]). RESRAD input parameters were selected to produce an effective evapotranspiration model reflective of the substandard rural landfill design and the semi-arid climate. Several estimation methods, including EPA's HELP Model (EPA 1994), were used to benchmark the evapotranspiration parameter selection. A comparison of evapotranspiration estimates is presented in Table C-1.

Table C-1. Comparison of Evapotranspiration Estimates

Method or Source	Evapotranspiration (meters/year)
RESRAD-Case A (BRL) ^a	0.33
EPA HELP Landfill ^b	0.38
Blaney-Criddle (SCS) method ^c	0.64
Adjusted "Reservoir Evaporation" ^d	0.61

^aDerived from RESRAD Manual pp 198 (DOE 1993).

^bLandfill and climatic parameter mirror the "Rural Landfill".

^cStandard Soil Conservation Service equation (Ward, et al., 1995). See Table C-4.

^dUSGS Reservoir data adjusted by a factor of 0.5 based on information in Ward (et al., 1995).

Note: Total precipitation in the Monticello area is about 0.46 meter/year (DOE 1990).

Key observations revealed in Table C-1 are:

- The RESRAD Disposal Case A (Baseline Rural Landfill [BRL]) evapotranspiration rate (0.33 meter/year) is the lowest and most conservative of the estimates.

- The RESRAD Case A evapotranspiration rate (0.33 meter/year) corresponds closely to the rate derived using EPA's HELP Model (0.38 meter/year).
- The RESRAD Case A and HELP Model evapotranspiration estimates are less than the total annual average precipitation in the Monticello area (about 0.46 meter/year). Thus, RESRAD and HELP predict a net infiltration that will accentuate leachate production.
- Evapotranspiration estimates derived from the two empirical methods (0.64 and 0.61 meter/year [Blaney-Criddle, Adjusted "Reservoir Evaporation," respectively]) are both higher than the annual average Monticello precipitation rate. RESRAD simulations with parameters geared to attain these evapotranspiration rates would likely predict a near net negative infiltration and minimal leachate production,* and would not produce conservative estimates.

To obtain an evapotranspiration rate of 0.33 meter/year, RESRAD default parameters were adjusted according to Table C-2.

Table C-2. Unsaturated Zone Hydraulic Parameters

Parameter	Value Used	RESRAD Default	Remark
Evaporation Coefficient	0.8	0.5	Constant used to compute evapotranspiration
Precipitation	0.46 m/yr	1.0 m/yr	Typical Monticello (DOE 1990)
Runoff Coefficient	0.1	0.2	Hilly terrain with slopes of 1 to 2 %

Note: See individual RESRAD printouts.

Figure C-1 illustrates the source and landfill configuration for Disposal Case B, the exaggerated infiltration and leaching case. As mentioned, Case B duplicates Case A with the exception that both infiltration and the hydraulic conductivity of the materials underlying the waste are both increased by a factor of 10 over Case A to exaggerate the simulated leachate generation and migration potential (the source strength also is intentionally exaggerated by a factor of 10).

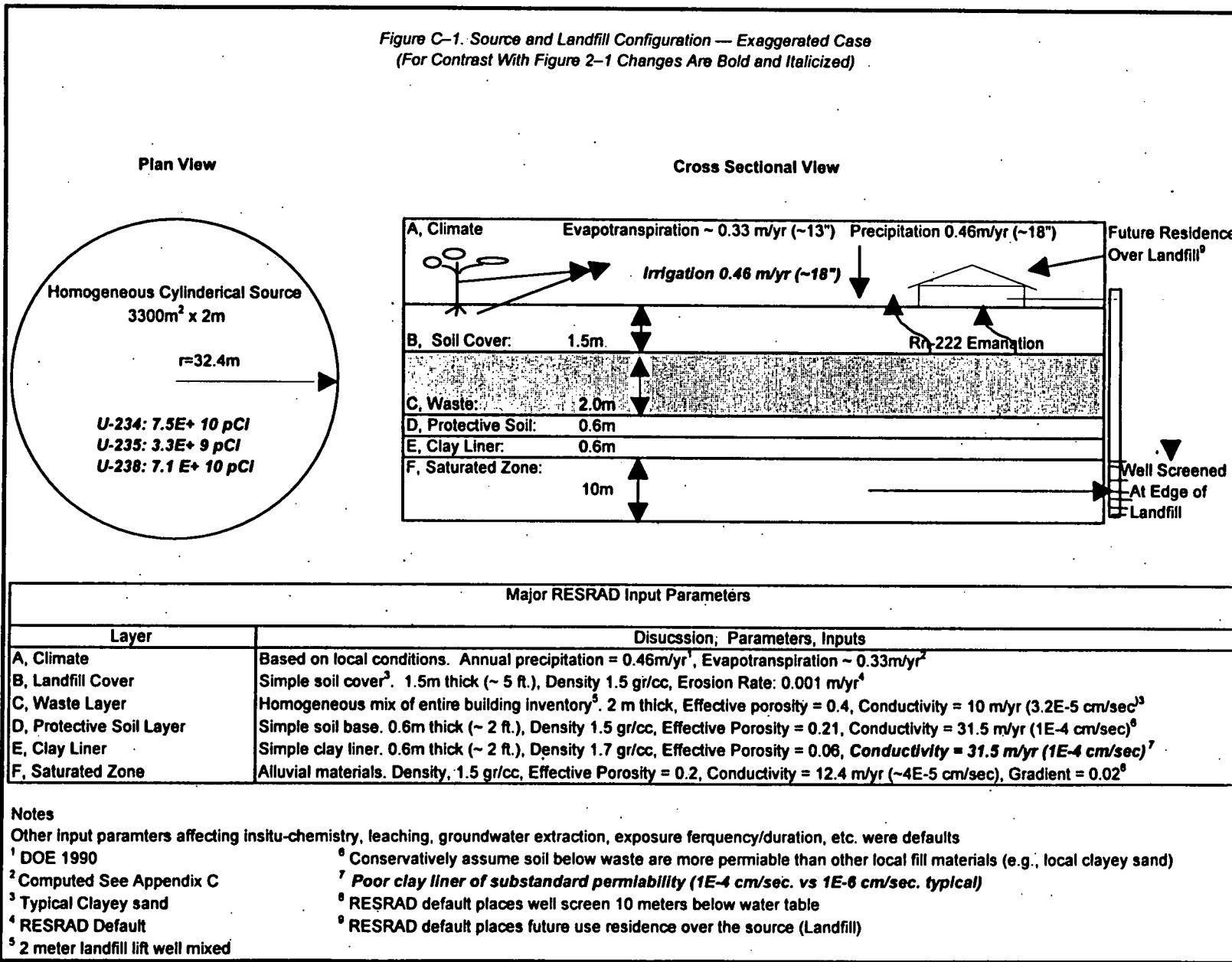
In-Situ Chemistry

As discussed, radionuclide-specific chemistry parameters were not modified from their default values because data required to gauge the in-situ effects of the yellow cake, sprayed-on foam insulation (SOFI), and soil materials comprising the landfill lift are not available. In the RESRAD model, as used in this application, in-situ processes are governed largely by the soil/water distribution coefficient (K_d). RESRAD's default K_d s, used in cases A, B, and C, are typical values obtained from relevant documented literature, and are representative of a wide range of conditions (DOE 1993).

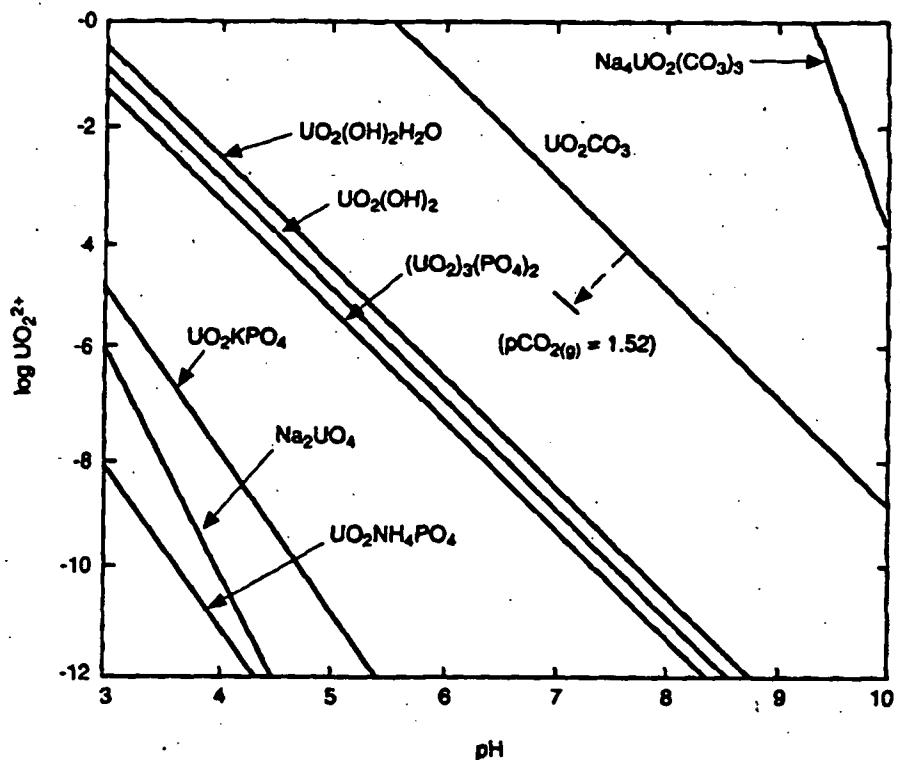
Residual uranium (U) in the contaminated building materials at MS-00685 is most likely the oxidized remnant uranyl ion (UO_2^{2+}) (i.e., U in VI state). Based on information from (EPA 1978), the residual materials could likely exist as uranium hydroxide ($UO_2(OH)_2 \cdot H_2O$) in the actual landfill as illustrated in Figure C-2. It is notable that this species has a comparatively low solubility product.

*HELP would not likely predict an actual net exfiltration owing to the effects of soil water depletion and changes in storage.

Figure C-1. Source and Landfill Configuration — Exaggerated Case
(For Contrast With Figure 2-1 Changes Are Bold and Italicized)



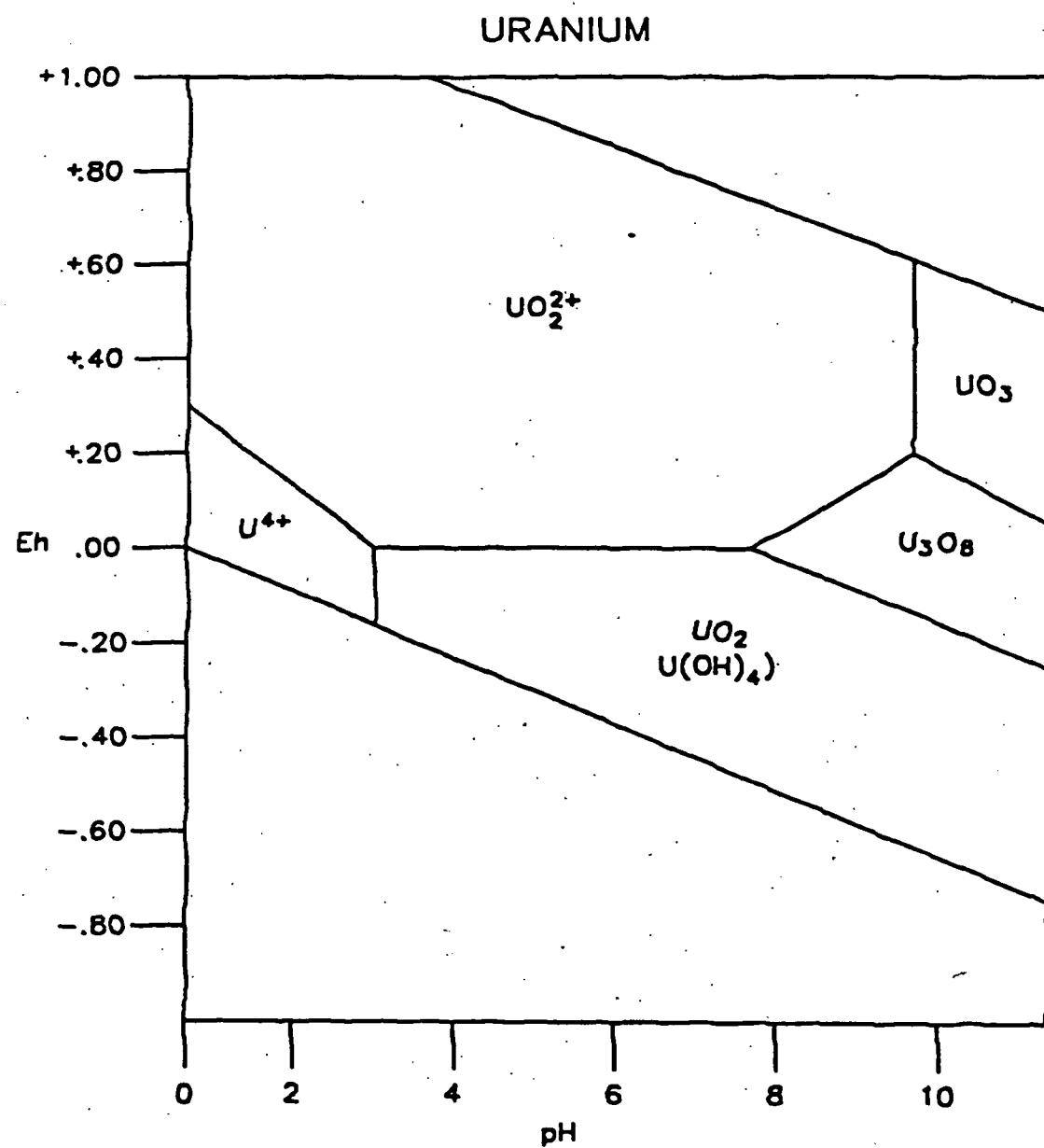
(approximately 1E-12 [Langmuir 1997]), which suggests a low leaching potential at moderate pH. Also, the encrustment of the residual radioactive contamination on the SOFI and other building components should effectively retard rather than enhance dissolution and leachate generation (Faure 1991), the uranyl species (oxidation state +6) is prevalent under oxidizing conditions, can form complex ions with oxygen, hydroxyl, carbonate, phosphate and other ions, and tends to be mobile.



Source: EPA 1978

Figure C-2. Relative Stability of Various Uranium Solids in an Oxidizing Environment

Within the confines of a landfill, reducing conditions will exist and the uranium can be anticipated to occur in the reduced 4+ state (i.e., U+IV, uranite) oxidation state. This is indicated in Figure C-3 where, under reducing conditions (Eh less than 0.00), uranium is expected to be found in the +IV oxidation state (e.g., UO_2 and $\text{U}(\text{OH})_4$). Reducing conditions are expected in a landfill owing to the decomposition of organic rich material (Apello 1993), particularly with the passage of time. In this reduced state, the uranite species are very insoluble as indicated by solubility products (K_{sp}) for hydroxylated species in the range of 1×10^{-50} (Langmuir 1996). Langmuir lists solubilities for $[\text{U}(\text{OU})_4]$ in the range of $10^{-8.7}$ Molar (~mole/L) (1996) which equates to approximately 0.16 pCi/L in pore water-soil equilibrium.



Source: Dragun 1988

Figure C-3. Speciation of Uranium in Oxidizing and Reducing Environments

In summary, the leaching or "source release potential" of building material contaminants deposited in a landfill is very low. As discussed below, in the event release occurs and the uranite species is oxidized to the more soluble uranyl (i.e., valance state +VI), as might occur if the leachate encounters oxidizing conditions down gradient of the landfill, migration along the natural groundwater flow path is possible.

Most alluvial groundwaters in the Monticello area are calcium-carbonate and calcium-sulfate in character and tend to be quite hard, which suggests a high ionic strength and an abundance of cations and

anions for complexation with the uranyl ion. The presence of sulfate as an anion (SO_4^{2-}) in background alluvial groundwater near Monticello would suggest uranyl sulfate (UO_2SO_4) in addition to uranyl carbonate ($\text{UO}_2[\text{CO}_3]_2^{2-}$) as an in-situ species from the leachate. Based on Langmuir (1997), both species (carbonate and sulfate) may be soluble in groundwater.

These observations suggest that the actual source material within the landfill is likely to be only slightly soluble in oxidizing conditions and moderate pH, thus minimizing release to the environment. Once released, complexation with carbonate and sulfate ligands in the groundwater could tend to enhance saturated zone migration.*

On balance, there are no apparent prominent factors suggesting unusual in-situ chemistry to indicate that the default Kds are inappropriate for this application under expected pH conditions (6 to 8). If the residual radioactive contamination in the building materials at MS-00685 contains significant uranyl hydroxide species as indicated (EPA 1978), RESRAD default Kds may tend to overestimate leaching in these models. Table C-3 identifies the default Kds, several ranges of typical Kds readily found in the open literature, and the leach rate computed by RESRAD from the infiltration rate, Kd, volumetric water content, and contaminated zone thickness.

Table C-3. In-Situ Chemistry Parameters

Radionuclide	Kd Used by RESRAD	Typical Kds in Open Literature	Leach Rate (fraction/year)
Uranium (U-234, -235, -238)	50	10.5 to 4,400 ^a 0.1 to 1,000,000 ^b 0 to 270 ^c 4,000 ^d	5.157E-4
Actinium-227	20	Not Found ^e	1.282E-3
Protactinium-231	50	Not Found ^e	5.157E-4
Lead-210	100	4.5 to 7,640 ^a 1 to 10,000 ^b	2.583E-4
Radium-226	70	10 to 1,000,000 ^b 214 to 6,700 ^c	3.687E-4
Thorium-230	60,000	2,000 to 510,000 ^a 10 to 100,000 ^b 1,000 to 1,000,000 ^c	4.312E-7

^aBaes and Sharp 1983.

^bDOE 1987.

^cEPA 1978.

^dLangmuir 1997 (on natural goethite [FeOOH]).

^eRadionuclides not evaluated in references 1, 2, or 3.

Note 1: Comparisons are illustrative only. Open literature Kds are for various soil types and pH ranges of 5 to 8. Generally, Kds were reported to vary directly, though not linearly with pH. Other sources may report variations.

Note 2: Leach rate computed by Equation E.3 (DOE 1993).

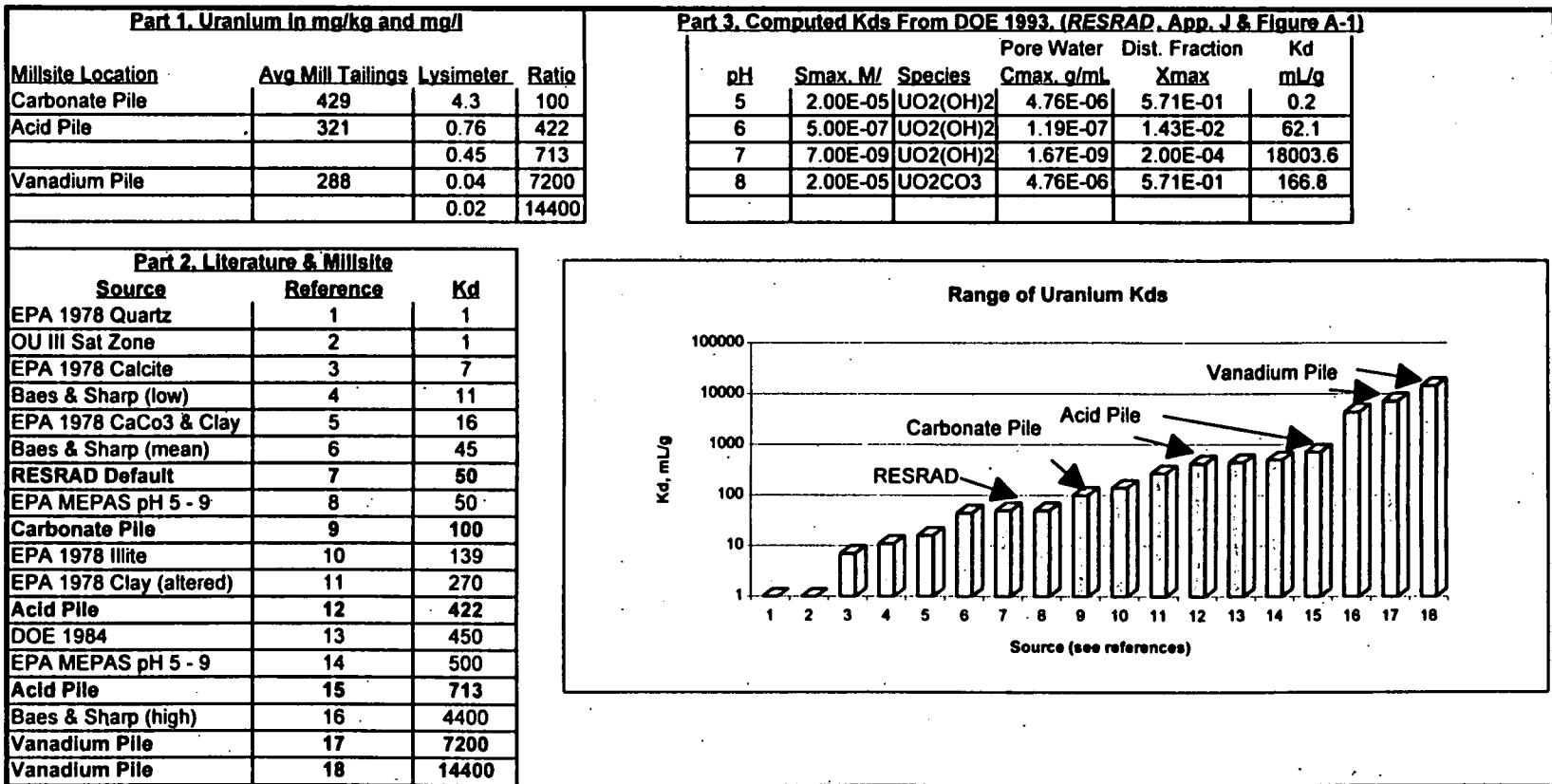
Note 3: See also Figure C-2.

Note 4: In the *Monticello Mill Tailings Site Operable Unit III Human Health Baseline Risk Assessment* (DOE 1997), the Kd used for uranium was approximately 1.0 based on a groundwater transport calibration. The source types (weathered tailings and encrusted yellow cake mixed with SOFI and building materials) are substantially different and would likely express different leaching characteristics.

*Both anionic species are acidic ligands of similar electronegativity.

An important observation gleaned from Table C-3 is that, for the available comparisons, RESRAD default Kds are well below the mid-range and tend toward the lower percentiles of the literature values. Since a lower Kd gives a higher dose, RESRAD defaults are probably conservative, particularly for the leachate generation portion of the evaluation.

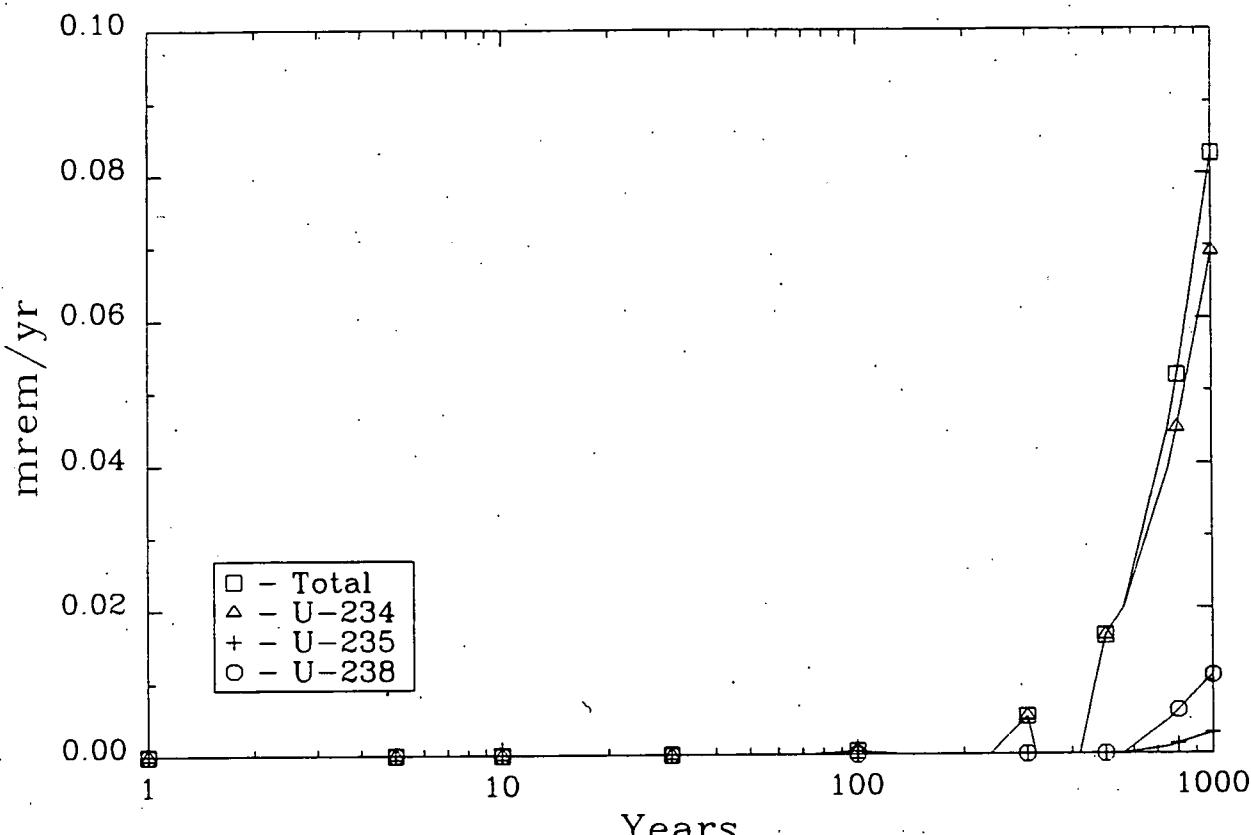
Additional insight into the range of plausible Kd estimates can be gleaned from Figure C-4, where site specific concentration ratios from the Millsite are compiled (Part 1) and displayed within relevant literature citations (Part 2 and Figure). It is apparent that the RESRAD default value of 50 (Reference 7) is well below (and more conservative) than Kds inferred from the Carbonate, Acid and Vanadium Piles at the Monticello millsite. Figure C-4 also illustrates the range of Kd estimates computed from DOE's geochemical-based distribution fraction method (Part 3). These estimates illustrate that only at low pH would the default Kd (50 milliliters per gram) not be conservative and that at the likely pH of 7 (Kd approximately 18,000) the default is highly conservative ($18,000/50 = 360$).

Figure C-4. Illustration of Millsite-Specific Distribution Data, Computed Kds, and Pertinent Literature Citations

Baseline Rural Landfill (BRL) - Reasonably Credible, Conservative Evaluation

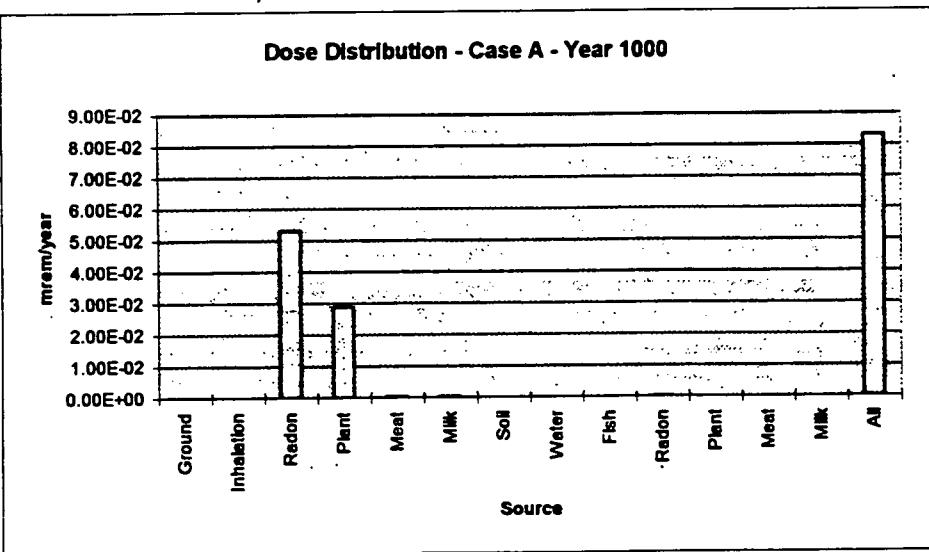
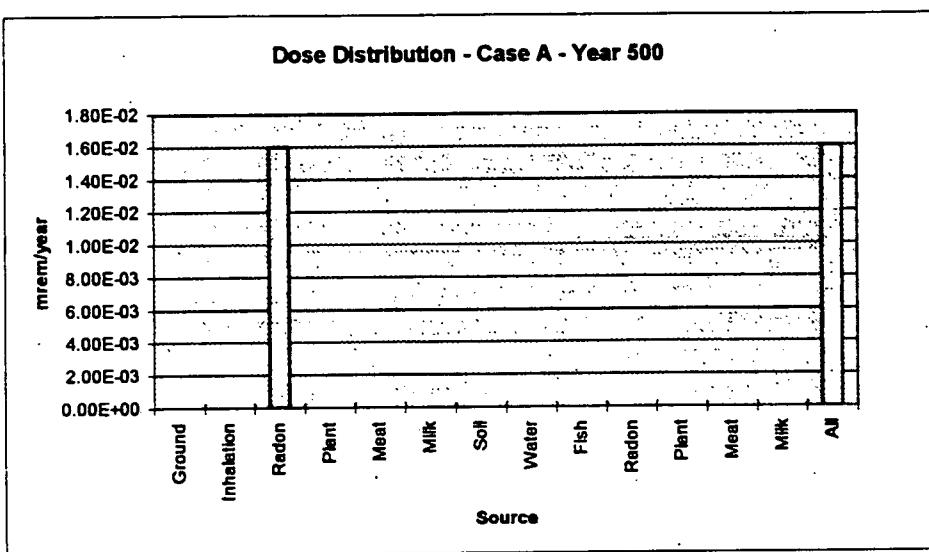
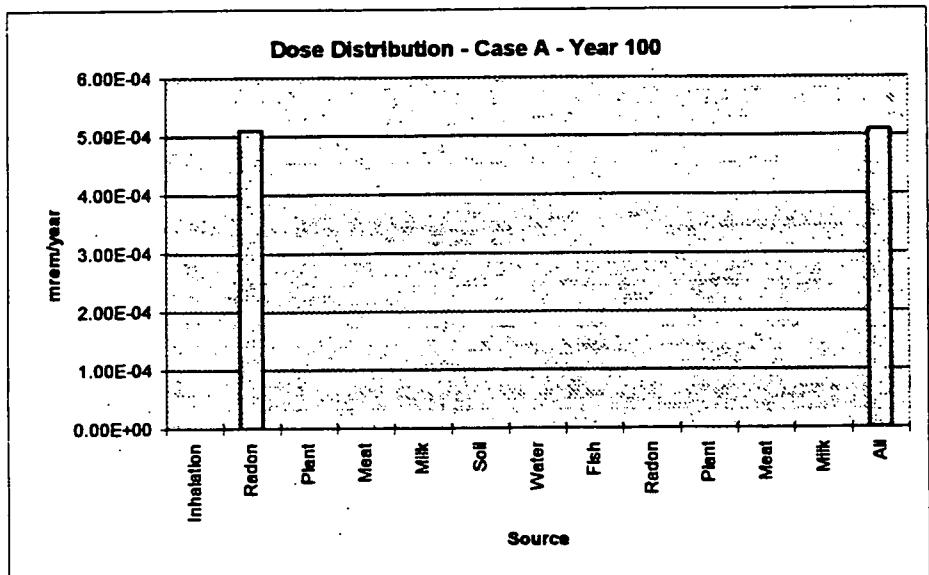
(Case A)

TOTAL DOSE: All Isotopes and Pathways Summed



YUNG09GR.DAT

06/11/97 14:00



SRAD, Version 5.60 T% Limit = 0.5 year 05/06/97 17:30 Page 1

Summary : Youngs Disposal #9GPull Homogen Source, Rural Landfill

File : YUNG09GR.DAT

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Time = 0.000E+00	11
Time = 1.000E+00	12
Time = 5.000E+00	13
Time = 1.000E+01	14
Time = 3.000E+01	15
Time = 1.000E+02	16
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Summary : Youngs Disposal #9G Full Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Dose Conversion Factor (and Related) Parameter Summary
File: DOSFAC.BIN

Menu	Parameter	Current Value	Default	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.720E+00	6.720E+00	DCF2(1)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(2)
B-1	Pb-210+D	2.320E-02	2.320E-02	DCF2(3)
B-1	Ra-226+D	8.600E-03	8.600E-03	DCF2(4)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(5)
B-1	U-234	1.320E-01	1.320E-01	DCF2(6)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(7)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(8)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.480E-02	DCF3(1)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(2)
D-1	Pb-210+D	7.270E-03	7.270E-03	DCF3(3)
D-1	Ra-226+D	1.330E-03	1.330E-03	DCF3(4)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(5)
D-1	U-234	2.830E-04	2.830E-04	DCF3(6)
D-1	U-235+D	2.670E-04	2.670E-04	DCF3(7)
D-1	U-238+D	2.690E-04	2.690E-04	DCF3(8)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTP(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTP(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTP(1,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTP(2,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTP(2,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTP(2,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTP(3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTP(3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTP(3,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTP(4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTP(4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTP(4,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTP(5,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTP(5,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTP(5,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTP(6,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTP(6,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTP(6,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTP(7,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTP(7,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTP(7,3)
D-34				

Summary : Youngs Disposal #9G Full Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Dose Conversion Factor (and Related) Parameter Summary (continued)

File: DOSPAC.BIN

	Parameter	Current		Parameter
		Value	Default	Name
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(8,1)
	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(8,2)
	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(8,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC(1,1)
	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(2,1)
	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(2,2)
D-5				
	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(3,1)
	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5				
	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(4,1)
	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(4,2)
D-5				
	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(5,1)
	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(5,2)
D-5				
	U-234 , fish	1.000E+01	1.000E+01	BIOFAC(6,1)
	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(6,2)
D-5				
	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(7,1)
	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(7,2)
D-5				
	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC(8,1)
	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(8,2)

Summary : Youngs Disposal #9G Full Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Site-Specific Parameter Summary

Menu	Parameter	User		Used by RESRAD (If different from user input)	Parameter
		Input	Default		Name
R011	Area of contaminated zone (m**2)	3.300E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	2.000E+00	2.000E+00	---	THICKO
R011	Length parallel to aquifer flow (m)	5.750E+01	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	3.000E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	5.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	5.000E+02	1.000E+03	---	T(8)
R011	Times for calculations (yr)	8.000E+02	0.000E+00	---	T(9)
R011	Times for calculations (yr)	1.000E+03	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g) : U-234	7.100E-01	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g) : U-235	3.100E-02	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g) : U-238	6.700E-01	0.000E+00	---	S1(8)
R012	Concentration in groundwater (pCi/L) : U-234	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L) : U-235	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L) : U-238	not used	0.000E+00	---	W1(8)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVERO
R013	Density of cover material (g/cm**3)	1.500E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.600E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone effective porosity	2.000E-01	2.000E-01	---	EPCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Humidity in air (g/cm**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	8.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	4.600E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	0.000E+00	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	1.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	2.500E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.240E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	7.120E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW

Summary : Youngs Disposal #9G Full Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	2	1	---	NS
R015	Unsat. zone 1, thickness (m)	6.100E-01	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	2.800E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.100E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.150E+01	1.000E+01	---	HCUZ(1)
R015	Unsat. zone 2, thickness (m)	6.100E-01	0.000E+00	---	H(2)
R015	Unsat. zone 2, soil density (g/cm**3)	1.700E+00	1.500E+00	---	DENSUZ(2)
R015	Unsat. zone 2, total porosity	4.200E-01	4.000E-01	---	TPUZ(2)
R015	Unsat. zone 2, effective porosity	6.000E-02	2.000E-01	---	EPUZ(2)
R015	Unsat. zone 2, soil-specific b parameter	1.000E+01	5.300E+00	---	BUZ(2)
R015	Unsat. zone 2, hydraulic conductivity (m/yr)	3.150E+00	1.000E+01	---	HCUZ(2)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(6,1)
R016	Unsaturated zone 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(6,2)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.157E-04	ALEBACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(7,1)
R016	Unsaturated zone 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(7,2)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.157E-04	ALEBACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(8,1)
R016	Unsaturated zone 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(8,2)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.157E-04	ALEBACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Unsaturated zone 2 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,2)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.282E-03	ALEBACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)

Summary : Youngs Disposal #9G Full Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User		Used by RESRAD (If different from user input)	Parameter Name
		Input	Default		
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,1)
R016	Unsaturated zone 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,2)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.157E-04	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(3,1)
R016	Unsaturated zone 2 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(3,2)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.583E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(4,1)
R016	Unsaturated zone 2 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(4,2)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.687E-04	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(5,1)
R016	Unsaturated zone 2 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(5,2)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.312E-07	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.000E-04	2.000E-04	---	MLINH
R017	Dilution length for airborne dust, inhalation (m)	3.000E+00	3.000E+00	---	LM
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHP3
R017	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHP1
R017	Fraction of time spent indoors	5.000E-01	5.000E-01	---	PIND
R017	Fraction of time spent outdoors (on site)	2.500E-01	2.500E-01	---	POTD
R017	Shape factor flag, external gamma	0.000E+00	1.000E+00	>0 shows circular AREA.	PS

Summary : Youngs Disposal #9G Full Homogen Source, Rural Landfill

Site : YUNG09GR.DAT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.600E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	5.400E+00	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	1.095E+03	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	1.000E+00	1.000E+00	---	FHWW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	PIRW
R018	Contamination fraction of aquatic food	5.000E-01	5.000E-01	---	FR9
R018	Contamination fraction of plant food	5.000E-01	-1	---	PPLANT
R018	Contamination fraction of meat	5.000E-01	-1	---	FMEAT
R018	Contamination fraction of milk	5.000E-01	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LPI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LPI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI

Summary : Youngs Disposal #9G Full Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	PGWDW
R019	Household water fraction from ground water	1.000E+00	1.000E+00	---	PGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	PGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	PGWIR
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVPG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	1.500E-01	1.500E-01	---	FLOOR
R021	Bulk density of building foundation (g/cm**3)	2.400E+00	2.400E+00	---	DBNSPL
R021	Total porosity of the cover material	4.000E-01	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	1.000E-01	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	5.000E-02	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	3.000E-02	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	2.000E-06	2.000E-06	---	DIFCV
R021	in foundation material	3.000E-07	3.000E-07	---	DIFPL
R021	in contaminated zone soil	2.000E-06	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	2.000E+00	2.000E+00	---	HMXI
R021	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R021	Average building air exchange rate (1/hr)	5.000E-01	5.000E-01	---	REXG
R021	Height of the building (room) (m)	2.500E+00	2.500E+00	---	HRM
R021	Building interior area factor	0.000E+00	0.000E+00	code computed (time dependent)	PAI
R021	Building depth below ground surface (m)	-1.000E+00	-1.000E+00	code computed (time dependent)	DMPL
R021	Emanating power of Rn-222 gas	2.500E-01	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)

Summary : Youngs Disposal #9GPull Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Summary of Pathway Selections

Pathway	User Selection
1 --- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	active

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Summary : Youngs Disposal #9G Full Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g.

Area:	3300.00 square meters	U-234	7.100E-01
Thickness:	2.00 meters	U-235	3.100E-02
Cover Depth:	1.50 meters	U-238	6.700E-01

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 30 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	5.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03
TDOSE(t):	0.000E+00	4.818E-08	1.207E-06	4.844E-06	4.411E-05	5.109E-04	5.183E-03	1.627E-02	5.209E-02	8.274E-02
M(t):	0.000E+00	1.606E-09	4.025E-08	1.615E-07	1.470E-06	1.703E-05	1.728E-04	5.422E-04	1.736E-03	2.758E-03

Maximum TDOSE(t): 8.274E-02 mrem/yr at t = 1.000E+03 years

Total Dose Contributions TDOSB(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000B+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000
U-235	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000
U-238	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000
Total	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000

Total Dose Contributions TDOSB(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000B+00 years

Water Dependent Pathways

Radio- Nuclide	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000
U-235	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000
U-238	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000
Total	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000

* of all water independent and dependent pathways.

RESRAD, Version 5.60 TX Limit = 0.5 year 05/06/97 17:30 Page 12

Summary : Youngs Disposal #9G Full Homogen Source, Rural Landfill

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	0.000E+00 0.0000	4.818E-08 1.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
U-235	0.000E+00 0.0000						
U-238	0.000E+00 0.0000	0.000E+00 0.0000	4.284E-14 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Total	0.000E+00 0.0000	0.000E+00 0.0000	4.818E-08 1.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio-	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	4.818E-08 1.0000					
U-235	0.000E+00 0.0000						
U-238	0.000E+00 0.0000	4.284E-14 0.0000					
Total	0.000E+00 0.0000	4.818E-08 1.0000					

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,P,t) for Individual Radionuclides (i) and Pathways (P)
As mrem/yr and Fraction of Total Dose At t = 5.000B+00 years

Water Independent Pathways (Inhalation excludes radon)

Ground	Inhalation	Radon	Plant	Meat	Milk	Soil						
Radioisotope	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000B+00	0.0000	0.000B+00	0.0000	1.207B-06	1.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000
U-235	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000
U-238	0.000B+00	0.0000	0.000B+00	0.0000	5.372B-12	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000
Total	0.000B+00	0.0000	0.000B+00	0.0000	1.207B-06	1.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000

Total Dose Contributions TDOSE(i,P,t) for Individual Radionuclides (i) and Pathways (P)
As mrem/yr and Fraction of Total Dose At t = 5.000B+00 years

Water Dependent Pathways

Water	Fish	Radon	Plant	Meat	Milk	All Pathways*						
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	1.207B-06	1.0000
U-235	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000
U-238	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	5.372B-12	0.0000
Total	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	0.000B+00	0.0000	1.207B-06	1.0000

* sum of all water independent and dependent pathways.

Summary : Youngs Disposal #9GPull Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	0.000E+00 0.0000	4.844E-06 1.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
U-235	0.000E+00 0.0000						
U-238	0.000E+00 0.0000	0.000E+00 0.0000	4.310E-11 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Total	0.000E+00 0.0000	0.000E+00 0.0000	4.844E-06 1.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio-	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	4.844E-06 1.0000					
U-235	0.000E+00 0.0000						
U-238	0.000E+00 0.0000	4.310E-11 0.0000					
Total	0.000E+00 0.0000	4.844E-06 1.0000					

*Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #9G Full Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil						
Radio-	Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
	U-234	0.000E+00	0.0000	0.000E+00	0.0000	4.411E-05	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
	U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
	T-238	0.000E+00	0.0000	0.000E+00	0.0000	1.177E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
	Total	0.000E+00	0.0000	0.000E+00	0.0000	4.411E-05	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*						
Radio-	Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
	U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.411E-05	1.0000
	U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
	T-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.177E-09	0.0000
	Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.411E-05	1.0000

of all water independent and dependent pathways.

Summary : Youngs Disposal #9G Full Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	5.108E-04	0.9999	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	4.537E-08	0.0001	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	5.109E-04	1.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio-	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0001
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #9G Full Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	0.000E+00 0.0000	5.181E-03 0.9997	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
U-235	0.000E+00 0.0000						
U-238	0.000E+00 0.0000	0.000E+00 0.0000	1.375E-06 0.0003	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Total	0.000E+00 0.0000	0.000E+00 0.0000	5.183E-03 1.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Pathway	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	5.181E-03 0.9997					
U-235	2.199E-10 0.0000	1.692E-12 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.314E-15 0.0000	2.955E-14 0.0000	2.216E-10 0.0000
U-238	0.000E+00 0.0000	1.375E-06 0.0003					
Total	2.199E-10 0.0000	1.692E-12 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.314E-15 0.0000	2.955E-14 0.0000	5.183E-03 1.0000

Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #9GPull Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 5.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	0.000E+00 0.0000	1.626E-02 0.9995	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
U-235	0.000E+00 0.0000						
U-238	0.000E+00 0.0000	0.000E+00 0.0000	7.160E-06 0.0004	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Total	0.000E+00 0.0000	0.000E+00 0.0000	1.627E-02 1.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 5.000E+02 years

Water Dependent Pathways

Radio-	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	1.626E-02 0.9995					
U-235	2.386E-07 0.0000	1.836E-09 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.852E-12 0.0000	3.207E-11 0.0000	2.405E-07 0.0000
U-238	0.000E+00 0.0000	7.160E-06 0.0004					
Total	2.386E-07 0.0000	1.836E-09 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.852E-12 0.0000	3.207E-11 0.0000	1.627E-02 1.0000

*Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #9G Full Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 8.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	3.669E-02	0.7044	7.919E-03	0.1520
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.201E-03	0.0231
U-238	0.000E+00	0.0000	0.000E+00	0.0000	2.566E-05	0.0005	5.781E-03	0.1110
Total	0.000E+00	0.0000	0.000E+00	0.0000	3.672E-02	0.7049	1.490E-02	0.2861
							2.233E-04	0.0043
							2.435E-04	0.0047
							0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 8.000E+02 years

Water Dependent Pathways

Pathway	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	3.957E-06	0.0001	3.046E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.957E-06	0.0001	3.046E-08	0.0000	0.000E+00	0.0000	1.136E-10	0.0000
							5.319E-10	0.0000
							0.000E+00	0.0000
							5.956E-03	0.1143
							5.209E-02	1.0000

* sum of all water independent and dependent pathways.

Summary : Youngs Disposal #9G Full Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	0.000E+00 0.0000	5.280E-02 0.6381	1.591E-02 0.1922	1.895E-04 0.0023	2.765E-04 0.0033	0.000E+00 0.0000
U-235	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.588E-03 0.0313	1.997E-04 0.0024	8.870E-06 0.0001	0.000E+00 0.0000
U-238	0.000E+00 0.0000	0.000E+00 0.0000	4.590E-05 0.0006	1.044E-02 0.1261	8.742E-05 0.0011	1.821E-04 0.0022	0.000E+00 0.0000
Total	0.000E+00 0.0000	0.000E+00 0.0000	5.285E-02 0.6387	2.893E-02 0.3497	4.766E-04 0.0058	4.675E-04 0.0056	0.000E+00 0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio-	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	6.918E-02 0.8360					
U-235	1.831E-05 0.0002	1.409E-07 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	5.257E-10 0.0000	2.461E-09 0.0000	2.815E-03 0.0340
U-238	0.000E+00 0.0000	1.075E-02 0.1300					
Total	1.831E-05 0.0002	1.409E-07 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	5.257E-10 0.0000	2.461E-09 0.0000	8.274E-02 1.0000

*Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #9G Full Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent	Product	Branch		DSR(j,t) (mrem/yr)/(pCi/g)									
(i)	(j)	Fraction	t =	0.000E+00	1.000E+00	5.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03
U-234	U-234	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.267E-03	1.671E-02	
U-234	Th-230	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.237E-05	1.485E-04
U-234	Ra-226	1.000E+00		0.000E+00	6.786E-08	1.701E-06	6.822E-06	6.213E-05	7.195E-04	7.298E-03	2.290E-02	5.264E-02	7.712E-02
U-234	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.182E-03	3.452E-03
U-234	ZDSR(j)			0.000E+00	6.786E-08	1.701E-06	6.822E-06	6.213E-05	7.195E-04	7.298E-03	2.290E-02	6.315E-02	9.743E-02
J-235	U-235	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.763E-03	1.581E-02
U-235	Pa-231	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.555E-02	5.750E-02
J-235	Ac-227	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.148E-09	7.757E-06
J-235	ZDSR(j)			0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.148E-09	7.757E-06
J-238	U-238	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.829E-03	1.593E-02
J-238	U-234	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.100E-05	4.734E-05
U-238	Th-230	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.585E-08	1.925E-07
U-238	Ra-226	1.000E+00		0.000E+00	6.394E-14	8.018E-12	6.432E-11	1.757E-09	6.772E-08	2.052E-06	1.069E-05	3.901E-05	7.105E-05
J-238	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.441E-07	3.086E-06
J-238	ZDSR(j)			0.000E+00	6.394E-14	8.018E-12	6.432E-11	1.757E-09	6.772E-08	2.052E-06	1.069E-05	8.890E-03	1.605E-02

Branch Fraction is the cumulative factor for the j'th principal radionuclide daughter: CUMBRF(j) = BRF(1)*BRF(2)* ... BRF(j).

ZDSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 30 mrem/yr

Nuclide		t = 0.000E+00	1.000E+00	5.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03
U-234		*6.233E+09	4.421E+08	1.764E+07	4.397E+06	4.829E+05	4.170E+04	4.111E+03	1.310E+03	4.751E+02	3.079E+02
U-235		*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	7.160E+02	3.303E+02
U-238		*3.360E+05	*3.360E+05	*3.360E+05	*3.360E+05	*3.360E+05	*3.360E+05	*3.360E+05	*3.360E+05	3.375E+03	1.869E+03

A specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	pCi/g	(years)		(pCi/g)		(pCi/g)
U-234	7.100E-01	1.000E+03	9.743E-02	3.079E+02	9.743E-02	3.079E+02
U-235	3.100E-02	1.000E+03	9.082E-02	3.303E+02	9.082E-02	3.303E+02
U-238	6.700E-01	1.000E+03	1.605E-02	1.869E+03	1.605E-02	1.869E+03

Summary : Youngs Disposal #9G Full Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide	Parent	BRF(i)	DOSE(j,t), mrem/yr										
(j)	(i)		t=	0.000E+00	1.000E+00	5.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03
U-234	U-234	1.000E+00		0.000E+00	6.580E-03	1.186E-02							
U-234	U-238	1.000E+00		0.000E+00	1.407E-05	3.172E-05							
U-234	Σ DOSE(j):			0.000E+00	6.594E-03	1.189E-02							
Th-230	U-234	1.000E+00		0.000E+00	4.428E-05	1.054E-04							
Th-230	U-238	1.000E+00		0.000E+00	4.412E-08	1.289E-07							
Th-230	Σ DOSE(j):			0.000E+00	4.433E-05	1.056E-04							
Ra-226	U-234	1.000E+00		0.000E+00	4.818E-08	1.207E-06	4.844E-06	4.411E-05	5.108E-04	5.181E-03	1.626E-02	3.737E-02	5.476E-02
Ra-226	U-238	1.000E+00		0.000E+00	4.284E-14	5.372E-12	4.310E-11	1.177E-09	4.537E-08	1.375E-06	7.160E-06	2.614E-05	4.760E-05
Ra-226	Σ DOSE(j):			0.000E+00	4.818E-08	1.207E-06	4.844E-06	4.411E-05	5.109E-04	5.183E-03	1.627E-02	3.740E-02	5.480E-02
Pb-210	U-234	1.000E+00		0.000E+00	8.393E-04	2.451E-03							
Pb-210	U-238	1.000E+00		0.000E+00	5.656E-07	2.068E-06							
Pb-210	Σ DOSE(j):			0.000E+00	8.399E-04	2.453E-03							
U-235	U-235	1.000E+00		0.000E+00	2.717E-04	4.901E-04							
Pa-231	U-235	1.000E+00		0.000E+00	7.921E-04	1.783E-03							
Ac-227	U-235	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.216E-10	2.405E-07	2.352E-04	5.428E-04
U-238	U-238	1.000E+00		0.000E+00	5.915E-03	1.067E-02							

BRF(i) is the branch fraction of the parent nuclide.

Summary : Youngs Disposal #9G Full Homogen Source, Rural Landfill

File : YUNG09GR.DAT

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

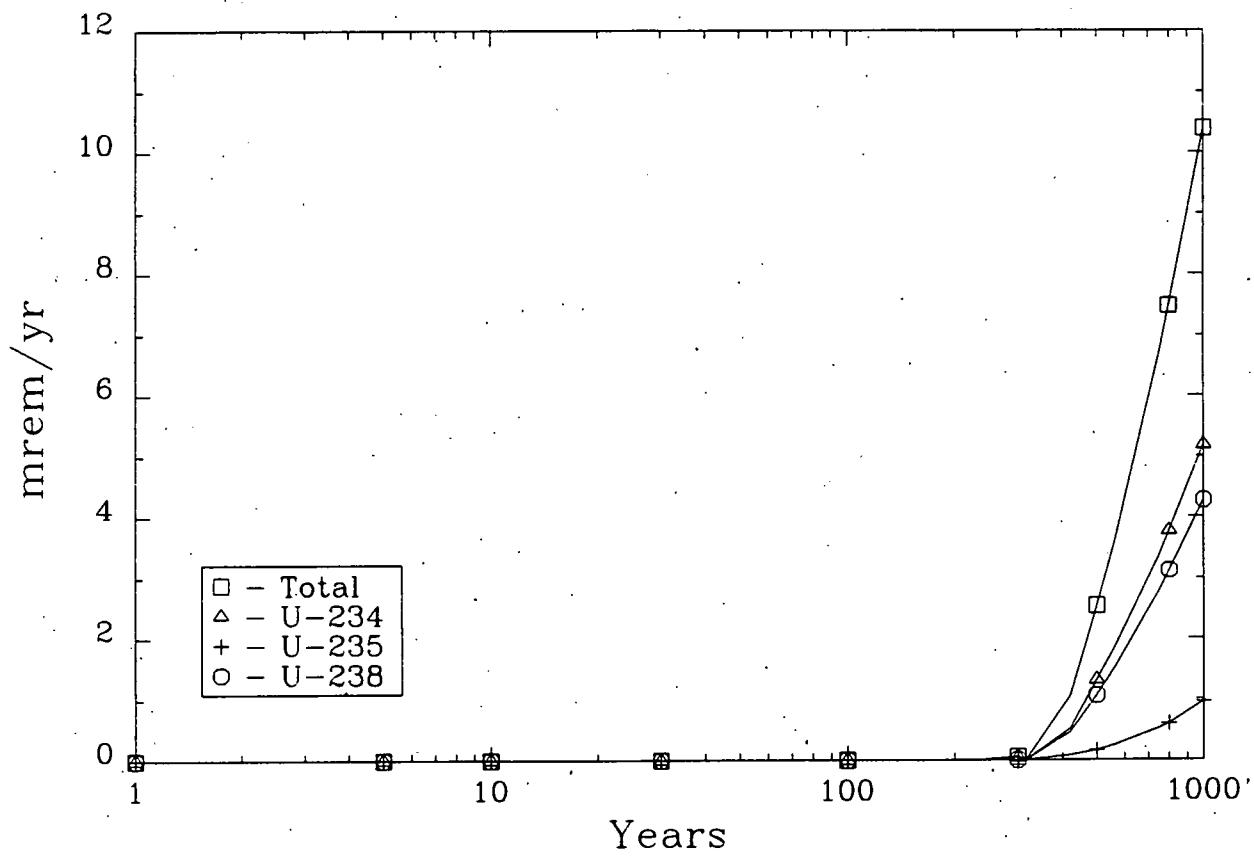
Nuclide	Parent	BRF(i)	S(j,t), pCi/g									
(j)	(i)	t = 0.000E+00 1.000E+00 5.000E+00 1.000E+01 3.000E+01 1.000E+02 3.000E+02 5.000E+02 8.000E+02 1.000E+03										
U-234	U-234	1.000E+00	7.100E-01	7.096E-01	7.082E-01	7.063E-01	6.990E-01	6.741E-01	6.077E-01	5.479E-01	4.689E-01	4.227E-01
U-234	U-238	1.000E+00	0.000E+00	1.895E-06	9.453E-06	1.886E-05	5.599E-05	1.800E-04	4.869E-04	7.318E-04	1.003E-03	1.130E-03
U-234	$\Sigma S(j)$:		7.100E-01	7.096E-01	7.082E-01	7.063E-01	6.991E-01	6.743E-01	6.082E-01	5.486E-01	4.699E-01	4.239E-01
Th-230	U-234	1.000E+00	0.000E+00	6.390E-06	3.191E-05	6.375E-05	1.902E-04	6.226E-04	1.773E-03	2.808E-03	4.168E-03	4.962E-03
Th-230	U-238	1.000E+00	0.000E+00	8.529E-12	2.129E-10	8.502E-10	7.599E-09	8.241E-08	6.922E-07	1.796E-06	4.153E-06	6.069E-06
Th-230	$\Sigma S(j)$:		0.000E+00	6.390E-06	3.191E-05	6.375E-05	1.902E-04	6.226E-04	1.774E-03	2.810E-03	4.173E-03	4.968E-03
Ra-226	U-234	1.000E+00	0.000E+00	1.384E-09	3.453E-08	1.378E-07	1.230E-06	1.325E-05	1.092E-04	2.782E-04	6.269E-04	9.009E-04
Ra-226	U-238	1.000E+00	0.000E+00	1.230E-15	1.536E-13	1.226E-12	3.281E-11	1.177E-09	2.899E-08	1.225E-07	4.384E-07	7.832E-07
Ra-226	$\Sigma S(j)$:		0.000E+00	1.384E-09	3.453E-08	1.378E-07	1.230E-06	1.325E-05	1.092E-04	2.784E-04	6.274E-04	9.017E-04
Pb-210	U-234	1.000E+00	0.000E+00	1.423E-11	1.722E-09	1.324E-08	3.078E-07	7.364E-06	8.870E-05	2.459E-04	5.813E-04	8.488E-04
Pb-210	U-238	1.000E+00	0.000E+00	9.737E-18	5.791E-15	8.970E-14	6.424E-12	5.486E-10	2.155E-08	1.023E-07	3.917E-07	7.162E-07
Pb-210	$\Sigma S(j)$:		0.000E+00	1.423E-11	1.722E-09	1.324E-08	3.078E-07	7.365E-06	8.872E-05	2.460E-04	5.817E-04	8.495E-04
Ac-227	U-235	1.000E+00	3.100E-02	3.098E-02	3.092E-02	3.084E-02	3.052E-02	2.944E-02	2.656E-02	2.395E-02	2.052E-02	1.851E-02
Ac-227	U-235	1.000E+00	0.000E+00	6.548E-07	3.267E-06	6.517E-06	1.935E-05	6.215E-05	1.678E-04	2.518E-04	3.440E-04	3.871E-04
Ac-227	U-238	1.000E+00	0.000E+00	1.033E-08	2.469E-07	9.348E-07	6.849E-06	4.283E-05	1.472E-04	2.309E-04	3.232E-04	3.665E-04
Ac-227	$\Sigma S(j)$:		6.700E-01	6.697E-01	6.683E-01	6.666E-01	6.597E-01	6.363E-01	5.740E-01	5.177E-01	4.435E-01	4.001E-01

BRF(i) is the branch fraction of the parent nuclide.

Baseline Rural Landfill - Modified (Source and Infiltration Exaggerated)

(Case B)

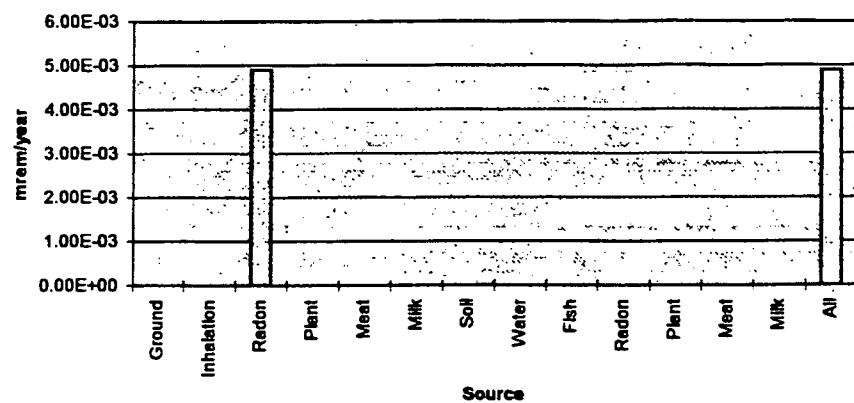
Total Dose. All Isotopes and Pathways Summed



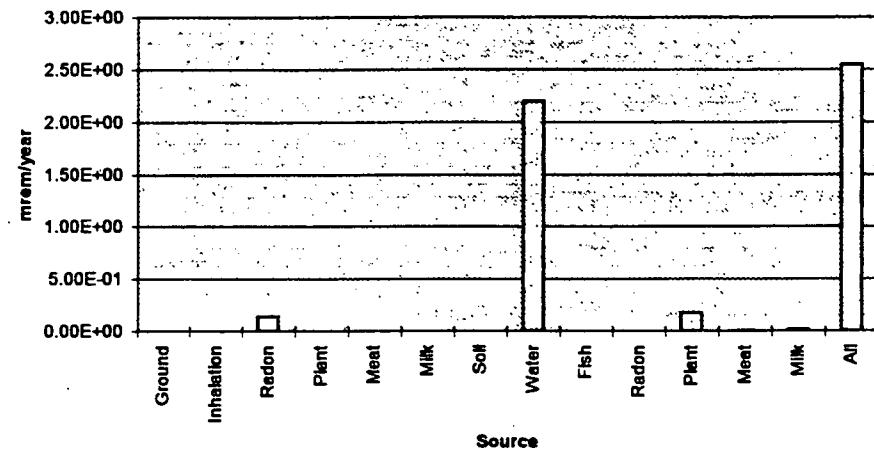
YUNG10GR.DAT

05/06/97 18:06

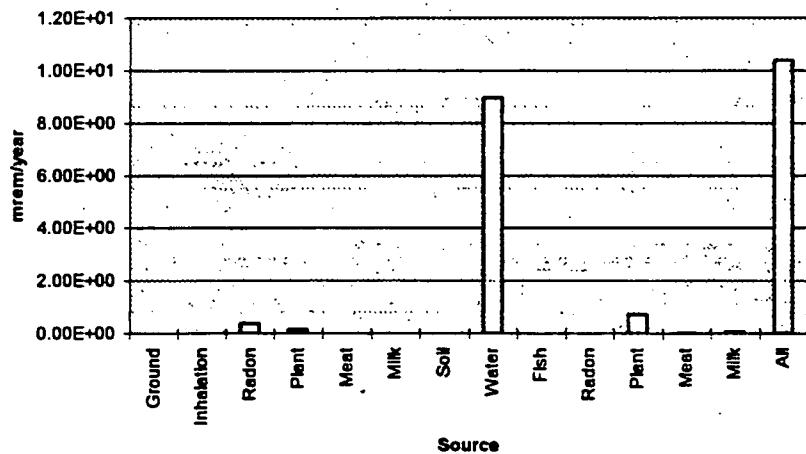
Dose Distribution - Case B - Year 100



Dose Distribution - Case B - Year 500



Dose Distribution - Case B - Year 1000



Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

File : YUNG10GR.DAT

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Time = 5.000E+00	13
Time = 1.000E+01	14
Time = 3.000E+01	15
Time = 1.000E+02	16
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Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

File : YUNG10GR.DAT

Dose Conversion Factor (and Related) Parameter Summary

File: DOSFAC.BIN

	Parameter	Current Value	Default	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
	Ac-227+D	6.720E+00	6.720E+00	DCP2(1)
	Pa-231	1.280E+00	1.280E+00	DCP2(2)
B-1	Pb-210+D	2.320E-02	2.320E-02	DCP2(3)
B-1	Ra-226+D	8.600E-03	8.600E-03	DCP2(4)
	Th-230	3.260E-01	3.260E-01	DCP2(5)
	U-234	1.320E-01	1.320E-01	DCP2(6)
B-1	U-235+D	1.230E-01	1.230E-01	DCP2(7)
	U-238+D	1.180E-01	1.180E-01	DCP2(8)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
	Ac-227+D	1.480E-02	1.480E-02	DCP3(1)
	Pa-231	1.060E-02	1.060E-02	DCP3(2)
D-1	Pb-210+D	7.270E-03	7.270E-03	DCP3(3)
D-1	Ra-226+D	1.330E-03	1.330E-03	DCP3(4)
	Th-230	5.480E-04	5.480E-04	DCP3(5)
	U-234	2.830E-04	2.830E-04	DCP3(6)
D-1	U-235+D	2.670E-04	2.670E-04	DCP3(7)
	U-238+D	2.690E-04	2.690E-04	DCP3(8)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTP(1,1)
	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTP(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTP(1,3)
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTP(2,1)
	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTP(2,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTP(2,3)
	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTP(3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTP(3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTP(3,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTP(4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTP(4,2)
	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTP(4,3)
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTP(5,1)
	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTP(5,2)
	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTP(5,3)
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTP(6,1)
	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTP(6,2)
	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTP(6,3)
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTP(7,1)
	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTP(7,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTP(7,3)

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

File : YUNG10GR.DAT

Dose Conversion Factor (and Related) Parameter Summary (continued)

File: DOSPAC.BIN

Menu	Parameter	Current		Parameter
		Value	Default	Name
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(8,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(8,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(8,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(2,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(2,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(3,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(4,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(4,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(5,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(5,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC(6,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(6,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(7,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(7,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC(8,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(8,2)

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

File : YUNG10GR.DAT

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.300E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	2.000E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	5.750E+01	1.000E+02	---	LCLZPAQ
R011	Basic radiation dose limit (mrem/yr)	3.000E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	5.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	5.000E+02	1.000E+03	---	T(8)
R011	Times for calculations (yr)	8.000E+02	0.000E+00	---	T(9)
R011	Times for calculations (yr)	1.000E+03	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): U-234	7.100E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): U-235	3.100E-01	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): U-238	6.700E+00	0.000E+00	---	S1(8)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(8)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.500E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.600E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone effective porosity	2.000E-01	2.000E-01	---	EPCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Humidity in air (g/cm**3)	not used	8.000E+00	---	HUMID
R013	Bapotranspiration coefficient	8.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	4.600E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	4.600E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	1.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WARBA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	2.500E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.240E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	7.120E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

File : YUNG10GR.DAT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	2	1	---	NS
R015	Unsat. zone 1, thickness (m)	6.100E-01	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	2.800E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.100E-01	2.000E-01	---	SPUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+02	1.000E+01	---	HCUZ(1)
R015					
R015	Unsat. zone 2, thickness (m)	6.100E-01	0.000E+00	---	H(2)
R015	Unsat. zone 2, soil density (g/cm**3)	1.700E+00	1.500E+00	---	DENSUZ(2)
R015	Unsat. zone 2, total porosity	4.200E-01	4.000E-01	---	TPUZ(2)
R015	Unsat. zone 2, effective porosity	6.000E-02	2.000E-01	---	SPUZ(2)
R015	Unsat. zone 2, soil-specific b parameter	1.000E+01	5.300E+00	---	BUZ(2)
R015	Unsat. zone 2, hydraulic conductivity (m/yr)	3.150E+01	1.000E+01	---	HCUZ(2)
R015					
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(6,1)
R016	Unsaturated zone 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(6,2)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.088E-03	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016					
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(7,1)
R016	Unsaturated zone 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(7,2)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.088E-03	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016					
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(8,1)
R016	Unsaturated zone 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(8,2)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.088E-03	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R016					
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Unsaturated zone 2 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,2)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.706E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User		Used by RESRAD	Parameter
		Input	Default	(If different from user input)	Name
6	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(2)
6	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,1)
6	Unsaturated zone 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,2)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.088E-03	ALEACH(2)
6	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for daughter Pb-210				
6	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC(3)
6	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(3,1)
R016	Unsaturated zone 2 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(3,2)
6	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS(3)
6	Leach rate (/yr)	0.000E+00	0.000E+00	5.452E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
6	Distribution coefficients for daughter Ra-226				
6	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(4,1)
6	Unsaturated zone 2 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(4,2)
6	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.783E-04	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(5)
6	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(5,1)
6	Unsaturated zone 2 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(5,2)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(5)
6	Leach rate (/yr)	0.000E+00	0.000E+00	9.104E-07	ALEACH(5)
6	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
7	Mass loading for inhalation (g/m**3)	2.000E-04	2.000E-04	---	MLINH
R017	Dilution length for airborne dust, inhalation (m)	3.000E+00	3.000E+00	---	LM
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
7	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
7	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	5.000E-01	5.000E-01	---	FIND
7	Fraction of time spent outdoors (on site)	2.500E-01	2.500E-01	---	FOTD
7	Shape factor flag, external gamma	0.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.600E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	5.400E+00	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	1.095E+03	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	1.000E+00	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	5.000E-01	5.000E-01	---	FR9
R018	Contamination fraction of plant food	5.000E-01	-1	---	PPLANT
R018	Contamination fraction of meat	5.000E-01	-1	---	FMEAT
R018	Contamination fraction of milk	5.000E-01	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LFIS
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	PGWDW
R019	Household water fraction from ground water	1.000E+00	1.000E+00	---	PGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	PGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	PGWIR
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVPG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVPG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
C01	Thickness of building foundation (m)	1.500E-01	1.500E-01	---	FLOOR
C01	Bulk density of building foundation (g/cm**3)	2.400E+00	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	4.000E-01	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	1.000E-01	1.000E-01	---	TPPL
C01	Volumetric water content of the cover material	5.000E-02	5.000E-02	---	PH2OCV
C01	Volumetric water content of the foundation	3.000E-02	3.000E-02	---	PH2OPL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	2.000E-06	2.000E-06	---	DIFCV
R021	in foundation material	3.000E-07	3.000E-07	---	DIFPL
R021	in contaminated zone soil	2.000E-06	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	2.000E+00	2.000E+00	---	HMX
R021	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R021	Average building air exchange rate (1/hr)	5.000E-01	5.000E-01	---	REXG
R021	Height of the building (room) (m)	2.500E+00	2.500E+00	---	HRM
R021	Building interior area factor	0.000E+00	0.000E+00	code computed (time dependent)	PAI
R021	Building depth below ground surface (m)	-1.000E+00	-1.000E+00	code computed (time dependent)	DMPL
R021	Emanating power of Rn-222 gas	2.500E-01	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)

RESRAD, Version 5.60 TM Limit = 0.5 year 05/06/97 18:06 Page 9

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

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Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	active

RESRAD, Version 5.60 T_{1/2} Limit = 0.5 year 05/06/97 18:06 Page 10

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

File : YUNG10GR.DAT

Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	3300.00 square meters	U-234	7.100E+00
Thickness:	2.00 meters	U-235	3.100E-01
Soil Depth:	1.50 meters	U-238	6.700E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 30 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	5.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03
TDOSE(t):	0.000E+00	4.817E-07	1.205E-05	4.828E-05	4.368E-04	4.945E-03	5.334E-02	2.541E+00	7.479E+00	1.040E+01
M(t):	0.000E+00	1.606E-08	4.018E-07	1.609E-06	1.456E-05	1.648E-04	1.778E-03	8.470E-02	2.493E-01	3.466E-01

Maximum TDOSE(t): 1.040E+01 mrem/yr at t = 1.000E+03 years

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000						
U-235	0.000E+00 0.0000						
U-238	0.000E+00 0.0000						
Total	0.000E+00 0.0000						

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio-	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000						
U-235	0.000E+00 0.0000						
U-238	0.000E+00 0.0000						
Total	0.000E+00 0.0000						

*Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

File : YUNG10GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	0.000E+00 0.0000	4.817E-07 1.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
U-235	0.000E+00 0.0000						
U-238	0.000E+00 0.0000	0.000E+00 0.0000	4.282E-13 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Total	0.000E+00 0.0000	0.000E+00 0.0000	4.817E-07 1.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Pathway	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	4.817E-07 1.0000					
U-235	0.000E+00 0.0000						
U-238	0.000E+00 0.0000	4.282E-13 0.0000					
Total	0.000E+00 0.0000	4.817E-07 1.0000					

Total dose of all water independent and dependent pathways.

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

File : YUNG10GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 5.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	1.205E-05	1.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	5.361E-11	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	1.205E-05	1.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 5.000E+00 years

Water Dependent Pathways

Radio-	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

File : YUNG10GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	4.828E-05	1.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	4.293E-10	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	4.828E-05	1.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

File : YUNG10GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation		Radon		Plant		Meat		Milk		Soil		
Nuclide		mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
U-234	0.000E+00	0.0000	0.000E+00	0.0000	4.368E-04	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	1.163E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	4.368E-04	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio-	Water	Fish		Radon		Plant		Meat		Milk		All Pathways*		
Nuclide		mrem/yr	fract.	mrem/yr	fract.									
U-234	0.000E+00	0.0000	4.368E-04	1.0000										
U-235	0.000E+00	0.0000	0.000E+00	0.0000										
U-238	0.000E+00	0.0000	1.163E-08	0.0000										
Total	0.000E+00	0.0000	4.368E-04	1.0000										

*Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

File : YUNG10GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
	mrem/yr fract.						
U-234	0.000E+00 0.0000	0.000E+00 0.0000	4.945E-03 0.9999	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
U-235	0.000E+00 0.0000						
U-238	0.000E+00 0.0000	0.000E+00 0.0000	4.365E-07 0.0001	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Total	0.000E+00 0.0000	0.000E+00 0.0000	4.945E-03 1.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Pathway	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
	mrem/yr fract.						
Water	0.000E+00 0.0000	4.945E-03 0.9999					
U-234	0.000E+00 0.0000						
U-235	0.000E+00 0.0000						
U-238	0.000E+00 0.0000	4.365E-07 0.0001					
Total	0.000E+00 0.0000	4.945E-03 1.0000					

Total dose of all water independent and dependent pathways.

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

File : YUNG10GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	4.706E-02	0.8823	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	1.225E-05	0.0002	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	4.708E-02	0.8825	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio-	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	5.767E-03	0.1081	2.102E-05	0.0004	0.000E+00	0.0000	4.748E-04	0.0089
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.102E-06	0.0000
Total	5.767E-03	0.1081	2.102E-05	0.0004	0.000E+00	0.0000	4.748E-04	0.0089
							1.882E-06	0.0000
							6.265E-03	0.1175
							1.225E-05	0.0002
							5.334E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

File : YUNG10GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 5.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	1.388E-01	0.0546	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	5.918E-05	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	1.389E-01	0.0547	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 5.000E+02 years

Water Dependent Pathways

Radio-	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	1.075E+00	0.4231	4.332E-04	0.0002	5.876E-06	0.0000	8.858E-02	0.0349
U-235	1.503E-01	0.0591	3.473E-04	0.0001	0.000E+00	0.0000	1.239E-02	0.0049
U-238	9.668E-01	0.3805	3.882E-04	0.0002	4.520E-08	0.0000	7.966E-02	0.0314
Total	2.192E+00	0.8627	1.169E-03	0.0005	5.921E-06	0.0000	1.806E-01	0.0711

Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

File : YUNG10GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 8.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	2.867E-01	0.0383	5.234E-02	0.0070
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.566E-03	0.0010
U-238	0.000E+00	0.0000	0.000E+00	0.0000	1.900E-04	0.0000	3.656E-02	0.0049
Total	0.000E+00	0.0000	0.000E+00	0.0000	2.869E-01	0.0384	9.647E-02	0.0129
					1.465E-03	0.0002	1.579E-03	0.0002
							0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 8.000E+02 years

Water Dependent Pathways

Radio-	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	3.126E+00	0.4179	1.300E-03	0.0002	1.709E-04	0.0000	2.576E-01	0.0344
U-235	5.379E-01	0.0719	1.280E-03	0.0002	0.000E+00	0.0000	4.432E-02	0.0059
U-238	2.809E+00	0.3755	1.128E-03	0.0002	6.624E-07	0.0000	2.314E-01	0.0309
Total	6.472E+00	0.8653	3.708E-03	0.0005	1.716E-04	0.0000	5.333E-01	0.0713
					2.404E-02	0.0032	5.961E-02	0.0080
							7.479E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

File : YUNG10GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	Nuclide	mrem/yr fract.					
	U-234	0.000E+00 0.0000	0.000E+00 0.0000	3.900E-01 0.0375	9.733E-02 0.0094	1.231E-03 0.0001	1.690E-03 0.0002
	U-235	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.454E-02 0.0014	1.135E-03 0.0001	4.999E-05 0.0000
	U-238	0.000E+00 0.0000	0.000E+00 0.0000	3.164E-04 0.0000	5.887E-02 0.0057	4.931E-04 0.0000	1.027E-03 0.0001
	Total	0.000E+00 0.0000	0.000E+00 0.0000	3.903E-01 0.0375	1.707E-01 0.0164	2.859E-03 0.0003	2.767E-03 0.0003
							0.000E+00 0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Radio-	Nuclide	mrem/yr fract.					
	U-234	4.277E+00 0.4114	1.843E-03 0.0002	4.769E-04 0.0000	3.525E-01 0.0339	1.408E-02 0.0014	4.193E-02 0.0040
	U-235	8.561E-01 0.0823	2.103E-03 0.0002	0.000E+00 0.0000	7.055E-02 0.0068	7.731E-03 0.0007	1.911E-03 0.0002
	U-238	3.836E+00 0.3690	1.541E-03 0.0001	1.705E-06 0.0000	3.161E-01 0.0304	1.252E-02 0.0012	3.766E-02 0.0036
	Total	8.970E+00 0.8627	5.487E-03 0.0005	4.786E-04 0.0000	7.391E-01 0.0711	3.433E-02 0.0033	8.150E-02 0.0078
							1.040E+01 1.0000

* sum of all water independent and dependent pathways.

Summary : Youngs Disposal #10G High Source, Leaky Liner; Irrigation

File : YUNG10GR.DAT

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent	Product	Branch	DSR(j,t) (mrem/yr)/(pCi/g)											
			(i)	(j)	Fraction	t = 0.000E+00	1.000E+00	5.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	5.000E+02	8.000E+02
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.659E-01	4.869E-01	6.658E-01	
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.081E-07	5.184E-05	1.179E-04	
U-234	Ra-226	1.000E+00	0.000E+00	6.784E-08	1.698E-06	6.800E-06	6.152E-05	6.964E-04	6.629E-03	1.957E-02	4.145E-02	5.784E-02		
U-234	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.769E-05	2.021E-03	5.610E-03	
U-234	Σ DSR(j)		0.000E+00	6.784E-08	1.698E-06	6.800E-06	6.152E-05	6.964E-04	6.629E-03	1.855E-01	5.304E-01	7.293E-01		
U-235	U-235	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.567E-01	4.604E-01	6.299E-01	
U-235	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.757E-02	3.289E-01	5.650E-01	
U-235	Ac-227	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.021E-02	3.065E-01	1.138E+00	1.883E+00
U-235	Σ DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.021E-02	5.308E-01	1.928E+00	3.078E+00
U-238	U-238	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.579E-01	4.639E-01	6.346E-01	
U-238	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.348E-04	1.103E-03	1.886E-03	
U-238	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.453E-10	5.141E-08	1.400E-07	
U-238	Ra-226	1.000E+00	0.000E+00	6.390E-14	8.002E-12	6.408E-11	1.736E-09	6.515E-08	1.829E-06	8.922E-06	3.019E-05	5.233E-05		
U-238	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.035E-07	5.084E-06	1.363E-05	
U-238	Σ DSR(j)		0.000E+00	6.390E-14	8.002E-12	6.408E-11	1.736E-09	6.515E-08	1.829E-06	1.581E-01	4.650E-01	6.366E-01		

Branch Fraction is the cumulative factor for the j'th principal radionuclide daughter: CUMBRF(j) = BRP(1)*BRP(2)* ... BRP(j).
The DSR includes contributions from associated (half-life < 0.5 yr) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 30 mrem/yr

Nuclide	Nuclide Soil Guidelines G(i,t) in pCi/g									
(i)	t = 0.000E+00	1.000E+00	5.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03
U-234	*6.233E+09	4.422E+08	1.767E+07	4.412E+06	4.876E+05	4.308E+04	4.526E+03	1.617E+02	5.656E+01	4.113E+01
U-235	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	1.484E+03	5.652E+01	1.556E+01	9.747E+00
U-238	*3.360E+05	*3.360E+05	*3.360E+05	*3.360E+05	*3.360E+05	*3.360E+05	*3.360E+05	1.897E+02	6.451E+01	4.713E+01

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide	DSR(i,t) in (mrem/yr)/(pCi/g)		Nuclide Soil Guidelines G(i,t) in pCi/g		DSR(i,t) in (mrem/yr)/(pCi/g)	
(i)	pCi/g	(years)		(pCi/g)		(pCi/g)
U-234	7.100E+00	1.000E+03	7.293E-01	4.113E+01	7.293E-01	4.113E+01
U-235	3.100E-01	1.000E+03	3.078E+00	9.747E+00	3.078E+00	9.747E+00
U-238	6.700E+00	1.000E+03	6.366E-01	4.713E+01	6.366E-01	4.713E+01

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

File : YUNG10GR.DAT

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide	Parent	BRF(i)	DOSE(j,t), mrem/yr										
			t=	0.000E+00	1.000E+00	5.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03
U-234	U-234	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.178E+00	3.457E+00	4.727E+00	
U-234	U-238	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.573E-03	7.392E-03	1.264E-02	
U-234	Σ DOSE(j):			0.000E+00	1.179E+00	3.464E+00	4.740E+00						
Th-230	U-234	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.678E-07	3.681E-04	8.368E-04	
Th-230	U-238	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.734E-10	3.444E-07	9.381E-07	
Th-230	Σ DOSE(j):			0.000E+00	7.688E-07	3.684E-04	8.378E-04						
Pb-226	U-234	1.000E+00		0.000E+00	4.817E-07	1.205E-05	4.828E-05	4.368E-04	4.945E-03	4.706E-02	1.389E-01	2.943E-01	4.107E-01
Pb-226	U-238	1.000E+00		0.000E+00	4.282E-13	5.361E-11	4.293E-10	1.163E-08	4.365E-07	1.225E-05	5.978E-05	2.022E-04	3.506E-04
Pb-226	Σ DOSE(j):			0.000E+00	4.817E-07	1.205E-05	4.828E-05	4.368E-04	4.945E-03	4.708E-02	1.390E-01	2.945E-01	4.110E-01
Pb-210	U-234	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.676E-04	1.435E-02	3.983E-02	
Pb-210	U-238	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.033E-06	3.406E-05	9.129E-05	
Pb-210	Σ DOSE(j):			0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.696E-04	1.438E-02	3.992E-02	
Pb-210	U-235	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.858E-02	1.427E-01	1.953E-01	
Pb-231	U-235	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.095E-02	1.020E-01	1.751E-01	
Ac-227	U-235	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.265E-03	9.502E-02	3.529E-01	5.837E-01
Pb-238	U-238	1.000E+00		0.000E+00	1.058E+00	3.108E+00	4.252E+00						

BRF(i) is the branch fraction of the parent nuclide.

Summary : Youngs Disposal #10G High Source, Leaky Liner, Irrigation

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Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

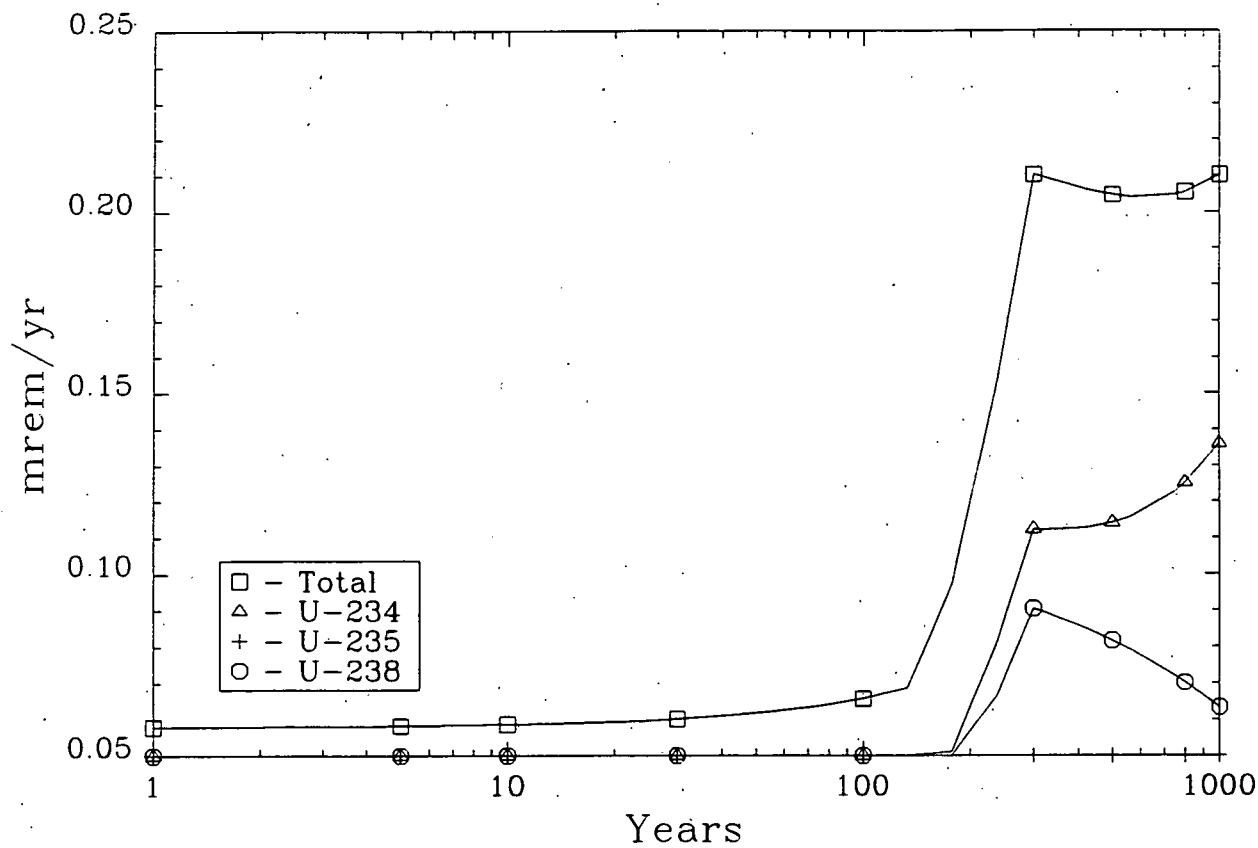
Nuclide	Parent	BRF(i)	S(j,t), pCi/g									
(j)	(i)	t= 0.000E+00 1.000E+00 5.000E+00 1.000E+01 3.000E+01 1.000E+02 3.000E+02 5.000E+02 8.000E+02 1.000E+03										
U-234	U-234	1.000E+00	7.100E+00 7.092E+00 7.061E+00 7.023E+00 6.871E+00 6.366E+00 5.118E+00 4.114E+00 2.966E+00 2.384E+00									
U-234	U-238	1.000E+00	0.000E+00 1.893E-05 9.426E-05 1.875E-04 5.504E-04 1.700E-03 4.101E-03 5.496E-03 6.341E-03 6.374E-03									
U-234	ES(j):		7.100E+00 7.092E+00 7.061E+00 7.023E+00 6.872E+00 6.368E+00 5.122E+00 4.120E+00 2.972E+00 2.390E+00									
Th-230	U-234	1.000E+00	0.000E+00 6.388E-05 3.187E-04 6.356E-04 1.886E-03 6.052E-03 1.633E-02 2.456E-02 3.395E-02 3.867E-02									
Th-230	U-238	1.000E+00	0.000E+00 8.526E-11 2.125E-09 8.470E-09 7.513E-08 7.934E-07 6.187E-06 1.493E-05 3.111E-05 4.253E-05									
Th-230	ES(j):		0.000E+00 6.388E-05 3.187E-04 6.356E-04 1.886E-03 6.053E-03 1.633E-02 2.458E-02 3.398E-02 3.872E-02									
Ra-226	U-234	1.000E+00	0.000E+00 1.383E-08 3.448E-07 1.374E-06 1.218E-05 1.282E-04 9.920E-04 2.376E-03 4.899E-03 6.653E-03									
Ra-226	U-238	1.000E+00	0.000E+00 1.230E-14 1.534E-12 1.222E-11 3.243E-10 1.132E-08 2.583E-07 1.013E-06 3.246E-06 5.399E-06									
Ra-226	ES(j):		0.000E+00 1.383E-08 3.448E-07 1.374E-06 1.218E-05 1.282E-04 9.923E-04 2.377E-03 4.902E-03 6.659E-03									
Pb-210	U-234	1.000E+00	0.000E+00 1.422E-10 1.719E-08 1.320E-07 3.049E-06 7.133E-05 8.063E-04 2.101E-03 4.543E-03 6.267E-03									
Pb-210	U-238	1.000E+00	0.000E+00 8.403E-17 5.779E-14 8.937E-13 6.353E-11 5.285E-09 1.924E-07 8.472E-07 2.907E-06 4.947E-06									
Pb-210	ES(j):		0.000E+00 1.422E-10 1.719E-08 1.320E-07 3.049E-06 7.133E-05 8.065E-04 2.102E-03 4.546E-03 6.272E-03									
U-235	U-235	1.000E+00	3.100E-01 3.097E-01 3.083E-01 3.066E-01 3.000E-01 2.780E-01 2.236E-01 1.799E-01 1.298E-01 1.044E-01									
Pa-231	U-235	1.000E+00	0.000E+00 6.544E-06 3.258E-05 6.479E-05 1.902E-04 5.869E-04 1.413E-03 1.891E-03 2.176E-03 2.183E-03									
Ac-227	U-235	1.000E+00	0.000E+00 1.032E-07 2.458E-06 9.269E-06 6.684E-05 3.978E-04 1.212E-03 1.693E-03 1.994E-03 2.016E-03									
U-238	U-238	1.000E+00	6.700E+00 6.693E+00 6.664E+00 6.627E+00 6.485E+00 6.009E+00 4.833E+00 3.888E+00 2.805E+00 2.256E+00									

BRF(i) is the branch fraction of the parent nuclide.

Baseline Rural Landfill - Shallow Disposal

(Case C)

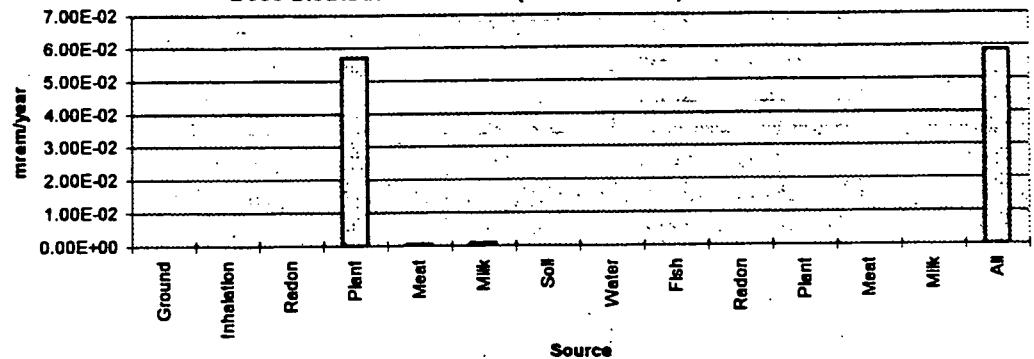
TOTAL DOSE: All Isotopes and Pathways Summed



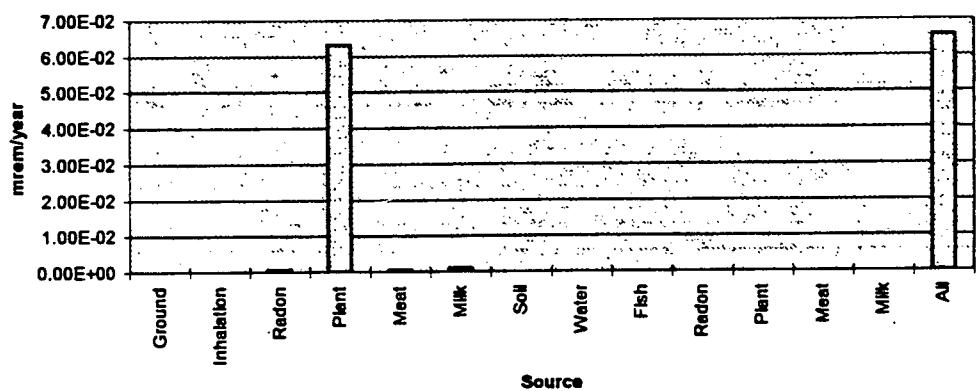
YUNG11GR.DAT

05/06/97 18:21

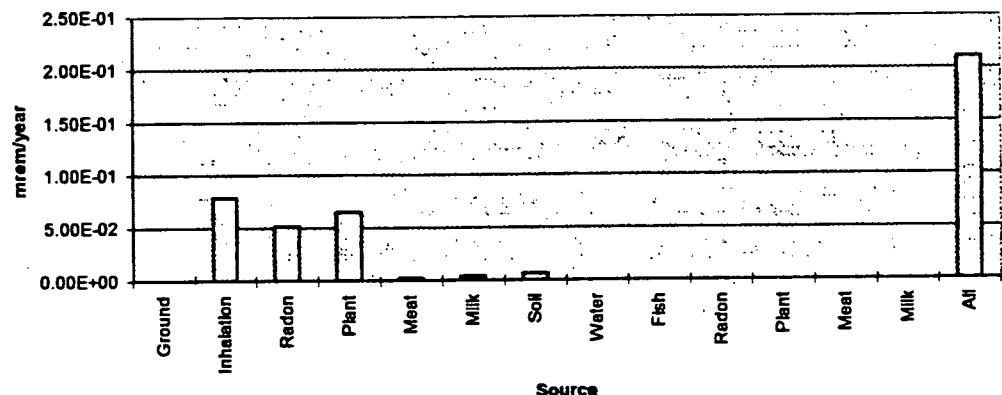
Dose Distribution - Case C (Shallow Burial) - Year 10



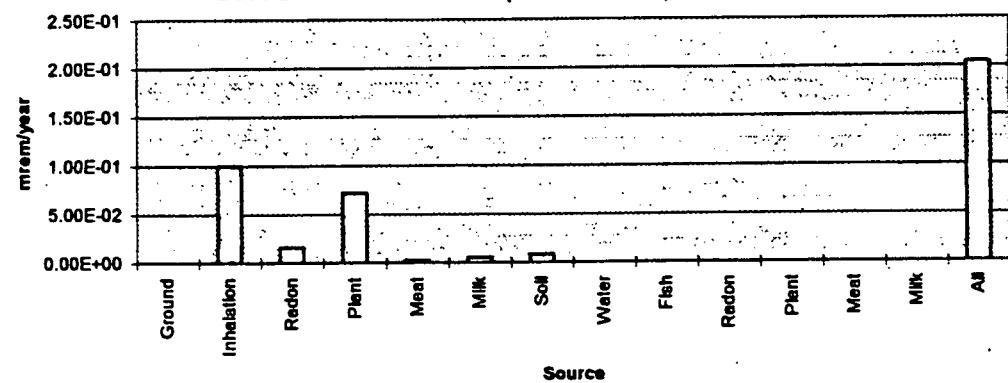
Dose Distribution - Case C (Shallow Burial) - Year 100



Dose Distribution - Case C - (Shallow Burial) - Year 500



Dose Distribution - Case C (Shallow Burial) - Year 1000



SRAD, Version 5.60 T% Limit = 0.5 year 05/06/97 18:21 Page 1

Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

File : YUNG11GR.DAT

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Time = 5.000E+00	13
Time = 1.000E+01	14
Time = 3.000E+01	15
Time = 1.000E+02	16
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Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

File : YUNG11GR.DAT

Dose Conversion Factor (and Related) Parameter Summary
File: DOSPAC.BIN

Menu	Parameter	Current Value	Default	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.720E+00	6.720E+00	DCP2(1)
B-1	Pa-231	1.280E+00	1.280E+00	DCP2(2)
B-1	Pb-210+D	2.320E-02	2.320E-02	DCP2(3)
B-1	Ra-226+D	8.600E-03	8.600E-03	DCP2(4)
B-1	Th-230	3.260E-01	3.260E-01	DCP2(5)
B-1	U-234	1.320E-01	1.320E-01	DCP2(6)
B-1	U-235+D	1.230E-01	1.230E-01	DCP2(7)
B-1	U-238+D	1.180E-01	1.180E-01	DCP2(8)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.480E-02	DCP3(1)
D-1	Pa-231	1.060E-02	1.060E-02	DCP3(2)
D-1	Pb-210+D	7.270E-03	7.270E-03	DCP3(3)
D-1	Ra-226+D	1.330E-03	1.330E-03	DCP3(4)
D-1	Th-230	5.480E-04	5.480E-04	DCP3(5)
D-1	U-234	2.830E-04	2.830E-04	DCP3(6)
D-1	U-235+D	2.670E-04	2.670E-04	DCP3(7)
D-1	U-238+D	2.690E-04	2.690E-04	DCP3(8)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTP(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTP(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTP(1,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTP(2,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTP(2,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTP(2,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTP(3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTP(3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTP(3,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTP(4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTP(4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTP(4,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTP(5,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTP(5,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTP(5,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTP(6,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTP(6,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTP(6,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTP(7,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTP(7,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTP(7,3)
D-34				

Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

File : YUNG11GR.DAT

Dose Conversion Factor (and Related) Parameter Summary (continued)

File: DOSPAC.BIN

		Parameter	Current		Parameter
			Value	Default	Name
D-34	U-238+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(8,1)
D-34	U-238+D	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(8,2)
D-34	U-238+D	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(8,3)
D-5		Bioaccumulation factors, fresh water, L/kg:			
	Ac-227+D	, fish	1.500E+01	1.500E+01	BIOFAC(1,1)
	Ac-227+D	, crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5					
	Pa-231	, fish	1.000E+01	1.000E+01	BIOFAC(2,1)
	Pa-231	, crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(2,2)
D-5					
	Pb-210+D	, fish	3.000E+02	3.000E+02	BIOFAC(3,1)
	Pb-210+D	, crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5					
	Ra-226+D	, fish	5.000E+01	5.000E+01	BIOFAC(4,1)
	Ra-226+D	, crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(4,2)
D-5					
	Th-230	, fish	1.000E+02	1.000E+02	BIOFAC(5,1)
	Th-230	, crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(5,2)
D-5					
	U-234	, fish	1.000E+01	1.000E+01	BIOFAC(6,1)
D-5	U-234	, crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(6,2)
D-5					
	U-235+D	, fish	1.000E+01	1.000E+01	BIOFAC(7,1)
D-5	U-235+D	, crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(7,2)
D-5					
	U-238+D	, fish	1.000E+01	1.000E+01	BIOFAC(8,1)
D-5	U-238+D	, crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(8,2)

Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

File : YUNG11GR.DAT

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.300E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	2.000E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	5.750E+01	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	3.000E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	5.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	5.000E+02	1.000E+03	---	T(8)
R011	Times for calculations (yr)	8.000E+02	0.000E+00	---	T(9)
R011	Times for calculations (yr)	1.000E+03	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): U-234	7.100E-01	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): U-235	3.100E-02	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): U-238	6.700E-01	0.000E+00	---	S1(8)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(8)
R013	Cover depth (m)	3.000E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.500E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.600E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone effective porosity	2.000E-01	2.000E-01	---	EPCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Humidity in air (g/cm**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	8.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	4.600E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	0.000E+00	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	1.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	2.500E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.240E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	7.120E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW

Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

File : YUNG11GR.DAT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
5	Number of unsaturated zone strata	2	1	---	NS
R015	Unsat. zone 1, thickness (m)	6.100E-01	4.000E+00	---	H(1)
015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
5	Unsat. zone 1, total porosity	2.800E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.100E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
5	Unsat. zone 1, hydraulic conductivity (m/yr)	3.150E+01	1.000E+01	---	HCUZ(1)
R015	Unsat. zone 2, thickness (m)	6.100E-01	0.000E+00	---	H(2)
5	Unsat. zone 2, soil density (g/cm**3)	1.700E+00	1.500E+00	---	DENSUZ(2)
5	Unsat. zone 2, total porosity	4.200E-01	4.000E-01	---	TPUZ(2)
R015	Unsat. zone 2, effective porosity	6.000E-02	2.000E-01	---	EPUZ(2)
015	Unsat. zone 2, soil-specific b parameter	1.000E+01	5.300E+00	---	BUZ(2)
5	Unsat. zone 2, hydraulic conductivity (m/yr)	3.150E+00	1.000E+01	---	HCUZ(2)
2016	Distribution coefficients for U-234				
5	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(6)
5	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(6,1)
2016	Unsaturated zone 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(6,2)
5	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(6)
5	Leach rate (/yr)	0.000E+00	0.000E+00	5.157E-04	ALBACH(6)
2016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
2016	Distribution coefficients for U-235				
5	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(7)
2016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(7,1)
5	Unsaturated zone 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(7,2)
5	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(7)
2016	Leach rate (/yr)	0.000E+00	0.000E+00	5.157E-04	ALBACH(7)
5	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
2016	Distribution coefficients for U-238				
5	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(8)
5	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(8,1)
5	Unsaturated zone 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(8,2)
5	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(8)
5	Leach rate (/yr)	0.000E+00	0.000E+00	5.157E-04	ALBACH(8)
5	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
2016	Distribution coefficients for daughter Ac-227				
5	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
2016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
2016	Unsaturated zone 2 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,2)
5	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
5	Leach rate (/yr)	0.000E+00	0.000E+00	1.282E-03	ALBACH(1)
2016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)

Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,1)
R016	Unsaturated zone 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,2)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.157E-04	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(3,1)
R016	Unsaturated zone 2 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(3,2)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.583E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(4,1)
R016	Unsaturated zone 2 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(4,2)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.687E-04	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(5,1)
R016	Unsaturated zone 2 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(5,2)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.312E-07	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.000E-04	2.000E-04	---	MLINH
R017	Dilution length for airborne dust, inhalation (m)	3.000E+00	3.000E+00	---	LM
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	5.000E-01	5.000E-01	---	PIND
R017	Fraction of time spent outdoors (on site)	2.500E-01	2.500E-01	---	POTD
R017	Shape factor flag, external gamma	0.000E+00	1.000E+00	>0 shows circular AREA.	PS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User		Used by RESRAD (If different from user input)	Parameter Name
		Input	Default		
R017	Radii of shape factor array (used if PS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.600E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	5.400E+00	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	1.095E+03	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	1.000E+00	1.000E+00	---	FHWW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	5.000E-01	5.000E-01	---	FR9
R018	Contamination fraction of plant food	5.000E-01	-1	---	PPLANT
R018	Contamination fraction of meat	5.000E-01	-1	---	PMBAT
R018	Contamination fraction of milk	5.000E-01	-1	---	PMILK
R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LPI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LPI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	PGWDW
R019	Household water fraction from ground water	1.000E+00	1.000E+00	---	PGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	PGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	PGWIR
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVPG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVPG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	1.500E-01	1.500E-01	---	FLOOR
R021	Bulk density of building foundation (g/cm**3)	2.400E+00	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	4.000E-01	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	1.000E-01	1.000E-01	---	TPPL
R021	Volumetric water content of the cover material	5.000E-02	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	3.000E-02	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	2.000E-06	2.000E-06	---	DIPCV
R021	in foundation material	3.000E-07	3.000E-07	---	DIPFL
R021	in contaminated zone soil	2.000E-06	2.000E-06	---	DIPCZ
R021	Radon vertical dimension of mixing (m)	2.000E+00	2.000E+00	---	HMX
R021	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R021	Average building air exchange rate (1/hr)	5.000E-01	5.000E-01	---	REXG
R021	Height of the building (room) (m)	2.500E+00	2.500E+00	---	HRM
R021	Building interior area factor	0.000E+00	0.000E+00	code computed (time dependent)	PAI
R021	Building depth below ground surface (m)	-1.000E+00	-1.000E+00	code computed (time dependent)	DMPL
R021	Emanating power of Rn-222 gas	2.500E-01	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)

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Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	active

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Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

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Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	3300.00 square meters	U-234	7.100E-01
Thickness:	2.00 meters	U-235	3.100E-02
Cover Depth:	0.30 meters	U-238	6.700E-01

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 30 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	5.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03
TDOSE(t):	5.793E-02	5.800E-02	5.829E-02	5.865E-02	6.013E-02	6.568E-02	2.103E-01	2.047E-01	2.055E-01	2.101E-01
M(t):	1.931E-03	1.933E-03	1.943E-03	1.955E-03	2.004E-03	2.189E-03	7.010E-03	6.823E-03	6.849E-03	7.005E-03

Maximum TDOSE(t): 2.103E-01 mrem/yr at t = 300.0 ± 0.3 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 300.0 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
U-234	0.000E+00	0.0000	5.805E-02	0.2760	6.434E-03	0.0306	3.866E-02	0.1838	1.273E-03	0.0061	3.061E-03	0.0146	4.756E-03	0.0226
U-235	0.000E+00	0.0000	3.212E-03	0.0153	0.000E+00	0.0000	3.570E-03	0.0170	3.833E-04	0.0018	1.268E-04	0.0006	3.024E-04	0.0014
U-238	0.000E+00	0.0000	4.871E-02	0.2316	1.708E-06	0.0000	3.370E-02	0.1603	1.112E-03	0.0053	2.725E-03	0.0130	4.230E-03	0.0201
Total	0.000E+00	0.0000	1.100E-01	0.5229	6.435E-03	0.0306	7.593E-02	0.3610	2.768E-03	0.0132	5.913E-03	0.0281	9.289E-03	0.0442

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 300.0 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	Nuclide	mrem/yr	fract.	mrem/yr										
U-234	0.000E+00	0.0000	1.122E-01	0.5337										
U-235	2.199E-10	0.0000	1.692E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.314E-15	0.0000	2.955E-14	0.0000	7.595E-03	0.0361
U-238	0.000E+00	0.0000	9.048E-02	0.4302										
Total	2.199E-10	0.0000	1.692E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.314E-15	0.0000	2.955E-14	0.0000	2.103E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	
Radio-	Nuclide	mrem/yr fract.						
	U-234	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.913E-02 0.5030	2.439E-04 0.0042	5.084E-04 0.0088	0.000E+00 0.0000
	U-235	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.200E-03 0.0207	1.005E-05 0.0002	2.094E-05 0.0004	0.000E+00 0.0000
	U-238	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.613E-02 0.4511	2.188E-04 0.0038	4.560E-04 0.0079	0.000E+00 0.0000
	Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	5.647E-02 0.9748	4.727E-04 0.0082	9.853E-04 0.0170	0.000E+00 0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*	
Radio-	Nuclide	mrem/yr fract.						
	U-234	0.000E+00 0.0000	2.989E-02 0.5159					
	U-235	0.000E+00 0.0000	1.231E-03 0.0213					
	U-238	0.000E+00 0.0000	2.681E-02 0.4628					
	Total	0.000E+00 0.0000	5.793E-02 1.0000					

* sum of all water independent and dependent pathways.

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Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	0.000E+00 0.0000	8.125E-08 0.0000	2.917E-02 0.5029	2.442E-04 0.0042	5.089E-04 0.0088	0.000E+00 0.0000
U-235	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.206E-03 0.0208	1.055E-05 0.0002	2.097E-05 0.0004	0.000E+00 0.0000
U-238	0.000E+00 0.0000	0.000E+00 0.0000	7.225E-14 0.0000	2.616E-02 0.4511	2.190E-04 0.0038	4.565E-04 0.0079	0.000E+00 0.0000
Total	0.000E+00 0.0000	0.000E+00 0.0000	8.125E-08 0.0000	5.654E-02 0.9748	4.737E-04 0.0082	9.864E-04 0.0170	0.000E+00 0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio-	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	2.992E-02 0.5159					
U-235	0.000E+00 0.0000	1.237E-03 0.0213					
U-238	0.000E+00 0.0000	2.684E-02 0.4628					
Total	0.000E+00 0.0000	5.800E-02 1.0000					

*Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 5.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	Nuclide	mrem/yr fract.					
	U-234	0.000E+00 0.0000	0.000E+00 0.0000	2.028E-06 0.0000	2.930E-02 0.5027	2.453E-04 0.0042	5.113E-04 0.0088
	U-235	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.228E-03 0.0211	1.260E-05 0.0002	2.106E-05 0.0004
	U-238	0.000E+00 0.0000	0.000E+00 0.0000	9.022E-12 0.0000	2.628E-02 0.4510	2.200E-04 0.0038	4.586E-04 0.0079
	Total	0.000E+00 0.0000	0.000E+00 0.0000	2.028E-06 0.0000	5.681E-02 0.9748	4.779E-04 0.0082	9.909E-04 0.0170
							0.000E+00 0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 5.000E+00 years

Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Radio-	Nuclide	mrem/yr fract.					
	U-234	0.000E+00 0.0000					
	U-235	0.000E+00 0.0000					
	U-238	0.000E+00 0.0000					
	Total	0.000E+00 0.0000	5.829E-02 1.0000				

* sum of all water independent and dependent pathways.

Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

File : YUNG11GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	0.000E+00 0.0000	8.093E-06 0.0001	2.947E-02 0.5025	2.467E-04 0.0042	5.142E-04 0.0088	0.000E+00 0.0000
U-235	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.257E-03 0.0214	1.518E-05 0.0003	2.119E-05 0.0004	0.000E+00 0.0000
U-238	0.000E+00 0.0000	0.000E+00 0.0000	7.201E-11 0.0000	2.643E-02 0.4507	2.213E-04 0.0038	4.612E-04 0.0079	0.000E+00 0.0000
Total	0.000E+00 0.0000	0.000E+00 0.0000	8.093E-06 0.0001	5.716E-02 0.9746	4.831E-04 0.0082	9.966E-04 0.0170	0.000E+00 0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio-	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	3.024E-02 0.5156					
U-235	0.000E+00 0.0000	1.293E-03 0.0220					
U-238	0.000E+00 0.0000	2.712E-02 0.4623					
Total	0.000E+00 0.0000	5.865E-02 1.0000					

*Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

File : YUNG11GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	0.000E+00 0.0000	7.221E-05 0.0012	3.013E-02 0.5011	2.523E-04 0.0042	5.257E-04 0.0087	0.000E+00 0.0000
U-235	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.381E-03 0.0230	2.577E-05 0.0004	2.168E-05 0.0004	0.000E+00 0.0000
U-238	0.000E+00 0.0000	0.000E+00 0.0000	1.927E-09 0.0000	2.702E-02 0.4494	2.262E-04 0.0038	4.715E-04 0.0078	0.000E+00 0.0000
Total	0.000E+00 0.0000	0.000E+00 0.0000	7.221E-05 0.0012	5.853E-02 0.9735	5.042E-04 0.0084	1.019E-03 0.0169	0.000E+00 0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Pathway	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	3.098E-02 0.5152					
U-235	0.000E+00 0.0000	1.429E-03 0.0238					
U-238	0.000E+00 0.0000	2.772E-02 0.4610					
Total	0.000E+00 0.0000	6.013E-02 1.0000					

Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

File : YUNG11GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	7.785E-04	0.0119	3.238E-02	0.4930
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.883E-03	0.0287
U-238	0.000E+00	0.0000	0.000E+00	0.0000	6.915E-08	0.0000	2.897E-02	0.4410
Total	0.000E+00	0.0000	0.000E+00	0.0000	7.786E-04	0.0119	6.323E-02	0.9627

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio-	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

File : YUNG11GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	Nuclide	mrem/yr fract.					
	U-234	0.000E+00 0.0000	5.805E-02 0.2760	6.434E-03 0.0306	3.866E-02 0.1838	1.273E-03 0.0061	3.061E-03 0.0146
	U-235	0.000E+00 0.0000	3.212E-03 0.0153	0.000E+00 0.0000	3.570E-03 0.0170	3.833E-04 0.0018	1.268E-04 0.0006
	U-238	0.000E+00 0.0000	4.871E-02 0.2316	1.708E-06 0.0000	3.370E-02 0.1603	1.112E-03 0.0053	2.725E-03 0.0130
	Total	0.000E+00 0.0000	1.100E-01 0.5229	6.435E-03 0.0306	7.593E-02 0.3610	2.768E-03 0.0132	5.913E-03 0.0281
							9.289E-03 0.0442

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Radio-	Nuclide	mrem/yr fract.					
	U-234	0.000E+00 0.0000					
	U-235	2.199E-10 0.0000	1.692E-12 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.314E-15 0.0000	2.955E-14 0.0000
	U-238	0.000E+00 0.0000					
	Total	2.199E-10 0.0000	1.692E-12 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.314E-15 0.0000	2.955E-14 0.0000
							2.103E-01 1.0000

Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

File : YUNG11GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 5.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	5.262E-02 0.2571	1.632E-02 0.0797	3.679E-02 0.1797	1.209E-03 0.0059	2.806E-03 0.0137	4.345E-03 0.0212
U-235	0.000E+00 0.0000	3.463E-03 0.0169	0.000E+00 0.0000	4.463E-03 0.0218	5.445E-04 0.0027	1.155E-04 0.0006	3.417E-04 0.0017
U-238	0.000E+00 0.0000	4.396E-02 0.2148	7.186E-06 0.0000	3.042E-02 0.1486	1.004E-03 0.0049	2.460E-03 0.0120	3.818E-03 0.0187
Total	0.000E+00 0.0000	1.000E-01 0.4888	1.633E-02 0.0798	7.167E-02 0.3502	2.757E-03 0.0135	5.382E-03 0.0263	8.505E-03 0.0416

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 5.000E+02 years

Water Dependent Pathways

Radio-	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	1.141E-01 0.5574					
U-235	2.386E-07 0.0000	1.836E-09 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.852E-12 0.0000	3.207E-11 0.0000	8.928E-03 0.0436
U-238	0.000E+00 0.0000	8.167E-02 0.3990					
Total	2.386E-07 0.0000	1.836E-09 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.852E-12 0.0000	3.207E-11 0.0000	2.047E-01 1.0000

*Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

File : YUNG11GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 8.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	4.546E-02 0.2213	3.643E-02 0.1773	3.572E-02 0.1738	1.169E-03 0.0057	2.506E-03 0.0122	3.834E-03 0.0187
U-235	0.000E+00 0.0000	3.690E-03 0.0180	0.000E+00 0.0000	5.412E-03 0.0263	7.206E-04 0.0035	1.003E-04 0.0005	3.807E-04 0.0019
U-238	0.000E+00 0.0000	3.770E-02 0.1835	2.547E-05 0.0001	2.609E-02 0.1270	8.607E-04 0.0042	2.109E-03 0.0103	3.274E-03 0.0159
Total	0.000E+00 0.0000	8.685E-02 0.4227	3.645E-02 0.1774	6.722E-02 0.3271	2.750E-03 0.0134	4.715E-03 0.0229	7.489E-03 0.0364

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 8.000E+02 years

Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Nuclide	mrem/yr fract.						
U-234	0.000E+00 0.0000	1.251E-01 0.6089					
U-235	3.957E-06 0.0000	3.046E-08 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.136E-10 0.0000	5.319E-10 0.0000	1.031E-02 0.0502
U-238	0.000E+00 0.0000	7.005E-02 0.3409					
Total	3.957E-06 0.0000	3.046E-08 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.136E-10 0.0000	5.319E-10 0.0000	2.055E-01 1.0000

of all water independent and dependent pathways.

Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

File : YUNG11GR.DAT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation		Radon		Plant		Meat		Milk		Soil		
Nuclide		mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
U-234	0.000E+00	0.0000	4.127E-02	0.1964	5.178E-02	0.2464	3.587E-02	0.1707	1.171E-03	0.0056	2.349E-03	0.0112	3.551E-03	0.0169
U-235	0.000E+00	0.0000	3.761E-03	0.0179	0.000E+00	0.0000	5.832E-03	0.0278	8.020E-04	0.0038	9.134E-05	0.0004	3.961E-04	0.0019
U-238	0.000E+00	0.0000	3.403E-02	0.1619	4.501E-05	0.0002	2.355E-02	0.1121	7.769E-04	0.0037	1.904E-03	0.0091	2.955E-03	0.0141
Total	0.000E+00	0.0000	7.906E-02	0.3762	5.183E-02	0.2466	6.525E-02	0.3105	2.749E-03	0.0131	4.344E-03	0.0207	6.902E-03	0.0328

Total Dose Contributions TDOSH(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio-	Water	Fish		Radon		Plant		Meat		Milk		All Pathways*		
Nuclide		mrem/yr	fract.	mrem/yr	fract.									
U-234	0.000E+00	0.0000	1.360E-01	0.6471										
U-235	1.831E-05	0.0001	1.409E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.257E-10	0.0000	2.461E-09	0.0000	1.090E-02	0.0519
U-238	0.000E+00	0.0000	6.325E-02	0.3010										
Total	1.831E-05	0.0001	1.409E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.257E-10	0.0000	2.461E-09	0.0000	2.101E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

File : YUNG11CR.DAT

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent	Product	Branch		DSR(j,t) - (mrem/yr)/(pCi/g)								
(i)	(j)	Fraction	t = 0.000E+00	1.000E+00	5.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03
U-234	U-234	1.000E+00	4.209E-02	4.214E-02	4.234E-02	4.257E-02	4.352E-02	4.663E-02	1.467E-01	1.322E-01	1.132E-01	1.020E-01
J-234	Th-230	1.000E+00	0.000E+00	2.873E-07	1.444E-06	2.909E-06	8.965E-06	3.260E-05	7.449E-04	1.180E-03	1.751E-03	2.084E-03
J-234	Ra-226	1.000E+00	0.000E+00	1.208E-07	3.015E-06	1.204E-05	1.076E-04	1.167E-03	9.826E-03	2.493E-02	5.570E-02	7.924E-02
U-234	Pb-210	1.000E+00	0.000E+00	8.694E-11	1.059E-08	8.213E-08	1.971E-06	5.241E-05	8.569E-04	2.376E-03	5.616E-03	8.200E-03
U-234	ZDSR(j)		4.209E-02	4.214E-02	4.234E-02	4.259E-02	4.364E-02	4.788E-02	1.581E-01	1.607E-01	1.762E-01	1.915E-01
J-235	U-235	1.000E+00	3.971E-02	3.976E-02	3.994E-02	4.017E-02	4.106E-02	4.400E-02	1.375E-01	1.241E-01	1.063E-01	9.586E-02
U-235	Pa-231	1.000E+00	0.000E+00	1.461E-04	7.338E-04	1.476E-03	4.526E-03	1.616E-02	6.722E-02	1.008E-01	1.378E-01	1.550E-01
J-235	Ac-227	1.000E+00	0.000E+00	7.162E-07	1.723E-05	6.578E-05	4.978E-04	3.459E-03	4.023E-02	6.311E-02	8.845E-02	1.008E-01
J-235	ZDSR(j)		3.971E-02	3.991E-02	4.069E-02	4.171E-02	4.608E-02	6.362E-02	2.450E-01	2.880E-01	3.325E-01	3.517E-01
J-238	U-238	1.000E+00	4.001E-02	4.006E-02	4.024E-02	4.047E-02	4.137E-02	4.433E-02	1.349E-01	1.217E-01	1.043E-01	9.404E-02
J-238	U-234	1.000E+00	0.000E+00	1.192E-07	5.989E-07	1.205E-06	3.694E-06	1.319E-05	1.245E-04	1.871E-04	2.564E-04	2.890E-04
U-238	Th-230	1.000E+00	0.000E+00	4.063E-13	1.021E-11	4.111E-11	3.795E-10	4.573E-09	3.082E-07	7.994E-07	1.849E-06	2.702E-06
U-238	Ra-226	1.000E+00	0.000E+00	1.138E-13	1.422E-11	1.135E-10	3.043E-09	1.099E-07	2.764E-06	1.164E-05	4.127E-05	7.300E-05
J-238	Pb-210	1.000E+00	0.000E+00	6.305E-17	3.775E-14	5.895E-13	4.360E-11	4.138E-09	2.206E-07	1.047E-06	4.010E-06	7.332E-06
J-238	ZDSR(j)		4.001E-02	4.006E-02	4.024E-02	4.047E-02	4.137E-02	4.435E-02	1.350E-01	1.219E-01	1.046E-01	9.441E-02

Each Fraction is the cumulative factor for the j'th principal radionuclide daughter: CUMBRP(j) = BRF(1)*BRF(2)* ... BRF(j).

DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 30 mrem/yr

Radon		Single Radionuclide Soil Guidelines G(i,t) in pCi/g									
(i)	t = 0.000E+00	1.000E+00	5.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03	
U-234	7.127E+02	7.119E+02	7.086E+02	7.044E+02	6.875E+02	6.266E+02	1.898E+02	1.867E+02	1.702E+02	1.566E+02	
J-235	7.554E+02	7.517E+02	7.372E+02	7.192E+02	6.510E+02	4.715E+02	1.225E+02	1.042E+02	9.022E+01	8.531E+01	
U-238	7.498E+02	7.489E+02	7.455E+02	7.413E+02	7.251E+02	6.765E+02	2.221E+02	2.461E+02	2.869E+02	3.178E+02	

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at t_{min} = time of minimum single radionuclide soil guideline

and at t_{max} = time of maximum total dose = 300.0 ± 0.3 years

Radon	Initial	t _{min}	DSR(i,t _{min})	G(i,t _{min})	DSR(i,t _{max})	G(i,t _{max})
(i)	pCi/g	(years)		(pCi/g)		(pCi/g)
U-234	7.100E-01	1.000E+03	1.915E-01	1.566E+02	1.581E-01	1.898E+02
J-235	3.100E-02	1.000E+03	3.517E-01	8.531E+01	2.450E-01	1.225E+02
J-238	6.700E-01	300.0 ± 0.3	1.350E-01	2.221E+02	1.350E-01	2.221E+02

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Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

File : YUNG11GR.DAT

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide	Parent	BRF(i)	DOSE(j,t), mrem/yr										
(j)	(i)	t= 0.000E+00 1.000E+00 5.000E+00 1.000E+01 3.000E+01 1.000E+02 3.000E+02 5.000E+02 8.000E+02 1.000E+03											
U-234	U-234	1.000E+00	2.989E-02 2.992E-02 3.006E-02 3.023E-02 3.090E-02 3.311E-02 1.041E-01 9.387E-02 8.034E-02 7.243E-02										
U-234	U-238	1.000E+00	0.000E+00 7.988E-08 4.012E-07 8.070E-07 2.475E-06 8.840E-06 8.343E-05 1.294E-04 1.718E-04 1.936E-04										
U-234	Σ DOSE(j):		2.989E-02 2.992E-02 3.006E-02 3.023E-02 3.090E-02 3.312E-02 1.042E-01 9.399E-02 8.051E-02 7.262E-02										
Th-230	U-234	1.000E+00	0.000E+00 2.040E-07 1.025E-06 2.065E-06 6.365E-06 2.315E-05 5.289E-04 8.376E-04 1.243E-03 1.480E-03										
Th-230	U-238	1.000E+00	0.000E+00 2.722E-13 6.842E-12 2.755E-11 2.543E-10 3.064E-09 2.065E-07 5.356E-07 1.239E-06 1.810E-06										
Th-230	Σ DOSE(j):		0.000E+00 2.040E-07 1.026E-06 2.065E-06 6.365E-06 2.315E-05 5.291E-04 8.381E-04 1.245E-03 1.482E-03										
Ra-226	U-234	1.000E+00	0.000E+00 8.576E-08 2.141E-06 8.549E-06 7.641E-05 8.287E-04 6.977E-03 1.770E-02 3.954E-02 5.626E-02										
Ra-226	U-238	1.000E+00	0.000E+00 7.625E-14 9.525E-12 7.607E-11 2.039E-09 7.361E-08 1.852E-06 7.796E-06 2.765E-05 4.891E-05										
Ra-226	Σ DOSE(j):		0.000E+00 8.576E-08 2.141E-06 8.549E-06 7.641E-05 8.288E-04 6.979E-03 1.771E-02 3.957E-02 5.631E-02										
Pb-210	U-234	1.000E+00	0.000E+00 6.172E-11 7.520E-09 5.831E-08 1.400E-06 3.721E-05 6.084E-04 1.687E-03 3.987E-03 5.822E-03										
Pb-210	U-238	1.000E+00	0.000E+00 4.224E-17 2.529E-14 3.950E-13 2.921E-11 2.772E-09 1.478E-07 7.013E-07 2.687E-06 4.912E-06										
Pb-210	Σ DOSE(j):		0.000E+00 6.172E-11 7.521E-09 5.831E-08 1.400E-06 3.721E-05 6.086E-04 1.687E-03 3.990E-03 5.827E-03										
U-235	U-235	1.000E+00	1.231E-03 1.233E-03 1.238E-03 1.245E-03 1.273E-03 1.364E-03 4.263E-03 3.846E-03 3.294E-03 2.972E-03										
Pa-231	U-235	1.000E+00	0.000E+00 4.529E-06 2.275E-05 4.575E-05 1.403E-04 5.009E-04 2.084E-03 3.126E-03 4.272E-03 4.806E-03										
Ac-227	U-235	1.000E+00	0.000E+00 2.220E-08 5.342E-07 2.039E-06 1.543E-05 1.072E-04 1.247E-03 1.956E-03 2.742E-03 3.124E-03										
U-238	U-238	1.000E+00	2.681E-02 2.684E-02 2.696E-02 2.711E-02 2.772E-02 2.970E-02 9.039E-02 8.154E-02 6.985E-02 6.300E-02										

BRF(i) is the branch fraction of the parent nuclide.

Summary : Youngs Disposal #11 Full Homogeneous Source Shallow Rural Landfill

File : YUNG11GR.DAT

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide	Parent	BRF(i)	S(j,t), pCi/g										
			t=	0.000E+00	1.000E+00	5.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	5.000E+02	8.000E+02	1.000E+03
U-234	U-234	1.000E+00		7.100E-01	7.096E-01	7.082E-01	7.063E-01	6.990E-01	6.741E-01	6.077E-01	5.479E-01	4.689E-01	4.227E-01
U-234	U-238	1.000E+00		0.000E+00	1.895E-06	9.453E-06	1.886E-05	5.599E-05	1.800E-04	4.869E-04	7.318E-04	1.003E-03	1.130E-03
U-234	$\Sigma S(j)$:			7.100E-01	7.096E-01	7.082E-01	7.063E-01	6.991E-01	6.743E-01	6.082E-01	5.486E-01	4.699E-01	4.239E-01
Th-230	U-234	1.000E+00		0.000E+00	6.390E-06	3.191E-05	6.375E-05	1.902E-04	6.226E-04	1.773E-03	2.808E-03	4.168E-03	4.962E-03
Th-230	U-238	1.000E+00		0.000E+00	8.529E-12	2.129E-10	8.502E-10	7.599E-09	8.241E-08	6.922E-07	1.796E-06	4.153E-06	6.069E-06
Th-230	$\Sigma S(j)$:			0.000E+00	6.390E-06	3.191E-05	6.375E-05	1.902E-04	6.226E-04	1.774E-03	2.810E-03	4.173E-03	4.968E-03
Ra-226	U-234	1.000E+00		0.000E+00	1.384E-09	3.453E-08	1.378E-07	1.230E-06	1.325E-05	1.092E-04	2.782E-04	6.269E-04	9.009E-04
Ra-226	U-238	1.000E+00		0.000E+00	1.230E-15	1.536E-13	1.226E-12	3.281E-11	1.177E-09	2.899E-08	1.225E-07	4.384E-07	7.832E-07
Ra-226	$\Sigma S(j)$:			0.000E+00	1.384E-09	3.453E-08	1.378E-07	1.230E-06	1.325E-05	1.092E-04	2.784E-04	6.274E-04	9.017E-04
Pb-210	U-234	1.000E+00		0.000E+00	1.423E-11	1.722E-09	1.324E-08	3.078E-07	7.364E-06	8.870E-05	2.459E-04	5.813E-04	8.488E-04
Pb-210	U-238	1.000E+00		0.000E+00	9.737E-18	5.791E-15	8.970E-14	6.424E-12	5.486E-10	2.155E-08	1.023E-07	3.917E-07	7.162E-07
Pb-210	$\Sigma S(j)$:			0.000E+00	1.423E-11	1.722E-09	1.324E-08	3.078E-07	7.365E-06	8.872E-05	2.460E-04	5.817E-04	8.495E-04
Ac-228	U-235	1.000E+00		3.100E-02	3.098E-02	3.092E-02	3.084E-02	3.052E-02	2.944E-02	2.656E-02	2.395E-02	2.052E-02	1.851E-02
Ac-228	U-235	1.000E+00		0.000E+00	6.548E-07	3.267E-06	6.517E-06	1.935E-05	6.215E-05	1.678E-04	2.518E-04	3.440E-04	3.871E-04
Ac-227	U-235	1.000E+00		0.000E+00	1.033E-08	2.469E-07	9.348E-07	6.849E-06	4.283E-05	1.472E-04	2.309E-04	3.232E-04	3.665E-04
Ac-228	U-238	1.000E+00		6.700E-01	6.697E-01	6.683E-01	6.666E-01	6.597E-01	6.363E-01	5.740E-01	5.177E-01	4.435E-01	4.001E-01

BRF(i) is the branch fraction of the parent nuclide.

**
** HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
** HELP MODEL VERSION 3.04 (10 APRIL 1995)
** DEVELOPED BY ENVIRONMENTAL LABORATORY
** USAE WATERWAYS EXPERIMENT STATION
** FOR USEPA RISK REDUCTION ENGINEERING LABORATORY
**

PRECIPITATION DATA FILE: C:\models\help3\ruralp1.D4
TEMPERATURE DATA FILE: C:\models\help3\ruralt1.D7
SOLAR RADIATION DATA FILE: C:\models\help3\rurals1.D13
EVAPOTRANSPIRATION DATA: C:\models\help3\rurale1.D11
SOIL AND DESIGN DATA FILE: C:\MODELS\HELP3\RURALSD2.D10
OUTPUT DATA FILE: C:\models\help3\rural2.OUT

TIME: 10: 5 DATE: 2/26/1997

TITLE: Rural Landfill, San Juan County, UT

NOTE: INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.

LAYER 1

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 13

THICKNESS = 59.00 INCHES
POROSITY = 0.4300 VOL/VOL
FIELD CAPACITY = 0.3210 VOL/VOL
WILTING POINT = 0.2210 VOL/VOL
INITIAL SOIL WATER CONTENT = 0.2801 VOL/VOL
EFFECTIVE SAT. HYD. COND. = 0.330000003000E-04 CM/SEC

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 1.80
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 13

THICKNESS = 79.00 INCHES
POROSITY = 0.4300 VOL/VOL
FIELD CAPACITY = 0.3210 VOL/VOL
WILTING POINT = 0.2210 VOL/VOL
INITIAL SOIL WATER CONTENT = 0.3163 VOL/VOL
EFFECTIVE SAT. HYD. COND. = 0.330000003000E-04 CM/SEC

LAYER 3

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 10

THICKNESS = 24.00 INCHES
POROSITY = 0.3980 VOL/VOL
FIELD CAPACITY = 0.2440 VOL/VOL
WILTING POINT = 0.1360 VOL/VOL
INITIAL SOIL WATER CONTENT = 0.2377 VOL/VOL
EFFECTIVE SAT. HYD. COND. = 0.119999997000E-03 CM/SEC

LAYER 4

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 15

THICKNESS = 24.00 INCHES
POROSITY = 0.4750 VOL/VOL
FIELD CAPACITY = 0.3780 VOL/VOL
WILTING POINT = 0.2650 VOL/VOL
INITIAL SOIL WATER CONTENT = 0.3722 VOL/VOL
EFFECTIVE SAT. HYD. COND. = 0.170000003000E-04 CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
SOIL DATA BASE USING SOIL TEXTURE #13 WITH A
FAIR STAND OF GRASS, A SURFACE SLOPE OF 2.%
AND A SLOPE LENGTH OF 200. FEET.

SCS RUNOFF CURVE NUMBER = 88.40
FRACTION OF AREA ALLOWING RUNOFF = 100.0 PERCENT
AREA PROJECTED ON HORIZONTAL PLANE = 62.500 ACRES
EVAPORATIVE ZONE DEPTH = 32.0 INCHES
INITIAL WATER IN EVAPORATIVE ZONE = 7.984 INCHES

UPPER LIMIT OF EVAPORATIVE STORAGE	=	13.760	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	7.072	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	56.150	INCHES
TOTAL INITIAL WATER	=	56.150	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
GRAND JUNCTION COLORADO

STATION LATITUDE	=	39.07	DEGREES
MAXIMUM LEAF AREA INDEX	=	1.00	
START OF GROWING SEASON (JULIAN DATE)	=	109	
END OF GROWING SEASON (JULIAN DATE)	=	293	
EVAPORATIVE ZONE DEPTH	=	32.0	INCHES
AVERAGE ANNUAL WIND SPEED	=	8.10	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	60.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	36.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	36.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	57.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR GRAND JUNCTION COLORADO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.64	0.54	0.75	0.71	0.76	0.44
0.47	0.91	0.70	0.87	0.63	0.58

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR GRAND JUNCTION COLORADO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
25.50	33.50	41.90	51.70	62.10	72.30
78.90	75.90	67.10	54.90	39.60	28.30

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR GRAND JUNCTION COLORADO
AND STATION LATITUDE = 39.07 DEGREES

MONTHLY TOTALS (IN INCHES) FOR YEAR 1

JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC

PRECIPITATION	0.14 0.00	0.61 1.27	0.53 1.04	0.78 1.19	0.01 1.08	0.32 0.45
RUNOFF	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000
EVAPOTRANSPIRATION	0.198 0.003	0.422 0.207	0.798 1.618	0.528 1.085	0.386 0.724	0.967 0.488
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0598 0.0532	0.0513 0.0500	0.0563 0.0471	0.0504 0.0470	0.0547 0.0468	0.0518 0.0460

ANNUAL TOTALS FOR YEAR 1

	INCHES	CU. FEET	PERCENT
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PRECIPITATION	7.42	1683412.620	100.00
RUNOFF	0.000	0.000	0.00
EVAPOTRANSPIRATION	7.425	1684534.620	100.07
PERC./LEAKAGE THROUGH LAYER 4	0.614514	139417.969	8.28
CHANGE IN WATER STORAGE	-0.619	-140540.234	-8.35
SOIL WATER AT START OF YEAR	56.150	12738977.000	
SOIL WATER AT END OF YEAR	55.530	12598437.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.298	0.00

MONTHLY TOTALS (IN INCHES) FOR YEAR 2

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.70 0.40	0.00 0.88	0.92 1.11	1.46 2.51	0.71 0.61	0.00 0.61
RUNOFF	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.020	0.000 0.000	0.000 0.016
EVAPOTRANSPIRATION	0.617 0.400	0.113 0.407	0.731 0.774	1.159 2.297	0.815 0.736	1.262 0.466
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0448 0.0408	0.0406 0.0387	0.0436 0.0389	0.0395 0.0386	0.0414 0.0365	0.0374 0.0369

ANNUAL TOTALS FOR YEAR 2

	INCHES	CU. FEET	PERCENT
PRECIPITATION	9.91	2248331.250	100.00
RUNOFF	0.036	8231.237	0.37
EVAPOTRANSPIRATION	9.777	2218166.000	98.66
PERC./LEAKAGE THROUGH LAYER 4	0.477519	108337.148	4.82
CHANGE IN WATER STORAGE	-0.381	-86404.875	-3.84
SOIL WATER AT START OF YEAR	55.530	12598437.000	
SOIL WATER AT END OF YEAR	55.149	12512032.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	1.643	0.00

MONTHLY TOTALS (IN INCHES) FOR YEAR 3

JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC

	JAN	JUL	FEB	AUG	MAR	SEP	APR	OCT	MAY	NOV	JUN	DEC
PRECIPITATION	0.56	0.35	0.19	1.45	0.93	0.00						
	0.29	1.58	1.01	0.85	1.47	0.06						
RUNOFF	0.064	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
EVAPOTRANSPIRATION	0.288	0.467	0.280	1.021	1.257	1.104						
	0.290	1.029	0.828	1.280	0.626	0.118						
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0359	0.0324	0.0359	0.0331	0.0340	0.0325						
	0.0337	0.0330	0.0311	0.0322	0.0308	0.0306						

ANNUAL TOTALS FOR YEAR 3

	INCHES	CU. FEET	PERCENT
PRECIPITATION	8.74	1982887.620	100.00
RUNOFF	0.066	14888.154	0.75
EVAPOTRANSPIRATION	8.588	1948416.620	98.26
PERC./LEAKAGE THROUGH LAYER 4	0.395180	89656.531	4.52
CHANGE IN WATER STORAGE	-0.309	-70072.789	-3.53
SOIL WATER AT START OF YEAR	55.149	12512032.000	
SOIL WATER AT END OF YEAR	54.841	12441959.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.865	0.00

MONTHLY TOTALS (IN INCHES) FOR YEAR 4

JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC

PRECIPITATION	0.22	0.39	0.79	1.14	1.05	0.85
	0.23	1.10	0.36	0.62	1.22	0.60
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION	0.216	0.788	0.829	0.688	1.311	1.228
	0.625	0.820	0.546	0.608	0.623	0.534
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0311	0.0269	0.0299	0.0290	0.0283	0.0272
	0.0283	0.0278	0.0265	0.0268	0.0249	0.0261

ANNUAL TOTALS FOR YEAR 4

	INCHES	CU. FEET	PERCENT
PRECIPITATION	8.57	1944319.370	100.00
RUNOFF	0.000	16.266	0.00
EVAPOTRANSPIRATION	8.816	2000201.000	102.87
PERC./LEAKAGE THROUGH LAYER 4	0.332863	75518.367	3.88
CHANGE IN WATER STORAGE	-0.579	-131416.547	-6.76
SOIL WATER AT START OF YEAR	54.841	12441959.000	
SOIL WATER AT END OF YEAR	54.261	12310543.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.284	0.00

MONTHLY TOTALS (IN INCHES) FOR YEAR 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.58	0.37	0.59	0.73	1.76	0.74
	0.81	0.72	0.80	1.22	1.20	0.84

RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION	0.594	0.574	0.722	0.572	1.851	0.787
	1.320	0.524	0.997	0.466	0.558	0.364
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0264	0.0233	0.0249	0.0234	0.0255	0.0231
	0.0228	0.0241	0.0227	0.0229	0.0226	0.0224

ANNUAL TOTALS FOR YEAR 5

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.36	2350425.250	100.00
RUNOFF	0.001	188.087	0.01
EVAPOTRANSPIRATION	9.328	2116332.000	90.04
PERC./LEAKAGE THROUGH LAYER 4	0.284049	64443.590	2.74
CHANGE IN WATER STORAGE	0.747	169459.562	7.21
SOIL WATER AT START OF YEAR	54.261	12310543.000	
SOIL WATER AT END OF YEAR	55.008	12480002.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	2.130	0.00

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.44	0.34	0.60	1.11	0.89	0.38
	0.35	1.11	0.86	1.28	1.12	0.51
STD. DEVIATIONS	0.24	0.22	0.28	0.35	0.63	0.40

	0.30	0.34	0.30	0.73	0.32	0.29
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RUNOFF

TOTALS	0.013 0.000	0.001 0.000	0.000 0.000	0.000 0.004	0.000 0.000	0.000 0.003
STD. DEVIATIONS	0.028 0.000	0.001 0.000	0.000 0.000	0.000 0.009	0.000 0.000	0.000 0.007

EVAPOTRANSPIRATION

TOTALS	0.383 0.528	0.473 0.598	0.672 0.952	0.793 1.147	1.124 0.653	1.070 0.394
STD. DEVIATIONS	0.206 0.496	0.246 0.328	0.224 0.405	0.281 0.724	0.552 0.075	0.196 0.166

PERCOLATION/LEAKAGE THROUGH LAYER 4

TOTALS	0.0396 0.0358	0.0349 0.0347	0.0381 0.0333	0.0351 0.0335	0.0368 0.0323	0.0344 0.0324
STD. DEVIATIONS	0.0132 0.0118	0.0113 0.0101	0.0123 0.0098	0.0104 0.0096	0.0117 0.0097	0.0111 0.0093

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 5

	INCHES	CU. FEET	PERCENT
PRECIPITATION	9.00	(1.165)	2041875.2
RUNOFF	0.021	(0.0296)	4664.75
EVAPOTRANSPIRATION	8.787	(0.8900)	1993530.00
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.42083	(0.13022)	95474.727
CHANGE IN WATER STORAGE	-0.228	(0.5606)	-51794.98

PEAK DAILY VALUES FOR YEARS	1 THROUGH (INCHES)	5 (CU. FT.)
PRECIPITATION	0.67	152006.250
RUNOFF	0.064	14439.4570
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.002333	529.40961
SNOW WATER	0.52	118046.4610
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.2915
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.2210

FINAL WATER STORAGE AT END OF YEAR 5

LAYER	(INCHES)	(VOL/VOL)
1	17.1311	0.2904
2	23.9520	0.3032
3	5.3355	0.2223
4	8.5897	0.3579
SNOW WATER	0.000	

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 3.04 (10 APRIL 1995)
DEVELOPED BY ENVIRONMENTAL LABORATORY
USAE WATERWAYS EXPERIMENT STATION
FOR USEPA RISK REDUCTION ENGINEERING LABORATORY

PRECIPITATION DATA FILE: C:\models\help3\RURALP2.D4
TEMPERATURE DATA FILE: C:\models\help3\ruralt1.D7
SOLAR RADIATION DATA FILE: C:\models\help3\rurals1.D13
EVAPOTRANSPIRATION DATA: C:\models\help3\rurale1.D11
SOIL AND DESIGN DATA FILE: C:\MODELS\HELP3\RURALSD2.D10
OUTPUT DATA FILE: C:\models\help3\rural4.OUT

TIME: 10:37 DATE: 4/ 1/1997

TITLE: Rural Landfill, San Juan County, UT

NOTE: INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.

LAYER 1

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 13

THICKNESS	=	59.00	INCHES
POROSITY	=	0.4300	VOL/VOL
FIELD CAPACITY	=	0.3210	VOL/VOL
WILTING POINT	=	0.2210	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2868	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.330000003000E-04	CM/SEC

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 1.80
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 13

THICKNESS	=	79.00	INCHES
POROSITY	=	0.4300	VOL/VOL
FIELD CAPACITY	=	0.3210	VOL/VOL
WILTING POINT	=	0.2210	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.3161	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.330000003000E-04	CM/SEC

LAYER 3

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 10

THICKNESS	=	24.00	INCHES
POROSITY	=	0.3980	VOL/VOL
FIELD CAPACITY	=	0.2440	VOL/VOL
WILTING POINT	=	0.1360	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2376	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.119999997000E-03	CM/SEC

LAYER 4

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 15

THICKNESS	=	24.00	INCHES
POROSITY	=	0.4750	VOL/VOL
FIELD CAPACITY	=	0.3780	VOL/VOL
WILTING POINT	=	0.2650	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.3721	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.170000003000E-04	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
SOIL DATA BASE USING SOIL TEXTURE #13 WITH A
FAIR STAND OF GRASS, A SURFACE SLOPE OF 2.⁸
AND A SLOPE LENGTH OF 200. FEET.

SCS RUNOFF CURVE NUMBER	=	88.40	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	62.500	ACRES
EVAPORATIVE ZONE DEPTH	=	32.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	8.388	INCHES

UPPER LIMIT OF EVAPORATIVE STORAGE	=	13.760	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	7.072	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	56.527	INCHES
TOTAL INITIAL WATER	=	56.527	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
GRAND JUNCTION COLORADO

STATION LATITUDE	=	39.07 DEGREES
MAXIMUM LEAF AREA INDEX	=	1.00
START OF GROWING SEASON (JULIAN DATE)	=	109
END OF GROWING SEASON (JULIAN DATE)	=	293
EVAPORATIVE ZONE DEPTH	=	32.0 INCHES
AVERAGE ANNUAL WIND SPEED	=	8.10 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	60.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	36.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	36.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	57.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SALT LAKE CITY UTAH

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
1.35	1.33	1.72	2.21	1.47	0.97
0.72	0.92	0.89	1.14	1.22	1.37

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR GRAND JUNCTION COLORADO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
25.50	33.50	41.90	51.70	62.10	72.30
78.90	75.90	67.10	54.90	39.60	28.30

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR GRAND JUNCTION COLORADO
AND STATION LATITUDE = 39.07 DEGREES

MONTHLY TOTALS (IN INCHES) FOR YEAR 2

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.49 0.39	1.87 2.86	2.10 0.79	1.34 0.89	1.98 0.83	0.97 1.14
RUNOFF	0.000 0.000	0.489 0.032	0.103 0.000	0.001 0.000	0.000 0.000	0.000 0.000
EVAPOTRANSPIRATION	0.300 1.276	0.717 2.362	1.981 1.009	1.700 0.479	1.994 0.792	2.040 0.596
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0446 0.0399	0.0404 0.0399	0.0428 0.0375	0.0410 0.0378	0.0403 0.0355	0.0395 0.0374

ANNUAL TOTALS FOR YEAR 2

	INCHES	CU. FEET	PERCENT
PRECIPITATION	15.65	3550594.000	100.00
RUNOFF	0.625	141728.484	3.99
EVAPOTRANSPIRATION	15.246	3458959.500	97.42
PERC./LEAKAGE THROUGH LAYER 4	0.476858	108187.234	3.05
CHANGE IN WATER STORAGE	-0.698	-158282.141	-4.46
SOIL WATER AT START OF YEAR	56.067	12720259.000	
SOIL WATER AT END OF YEAR	55.370	12561977.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.852	0.00

MONTHLY TOTALS (IN INCHES) FOR YEAR 3

MONTHLY TOTALS (IN INCHES) FOR YEAR 1

JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC

PRECIPITATION	0.44 0.49	0.76 1.63	1.55 0.76	0.98 2.00	0.72 0.97	0.40 1.39
RUNOFF	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.003	0.000 0.000	0.000 0.000
EVAPOTRANSPIRATION	0.579 0.771	0.915 1.419	1.234 0.830	1.301 1.607	0.610 0.743	1.126 0.802
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0595 0.0501	0.0500 0.0503	0.0558 0.0458	0.0532 0.0477	0.0538 0.0457	0.0518 0.0464

ANNUAL TOTALS FOR YEAR 1

	INCHES	CU. FEET	PERCENT
PRECIPITATION	12.09	2742919.000	100.00
RUNOFF	0.004	824.404	0.03
EVAPOTRANSPIRATION	11.936	2707882.500	98.72
PERC./LEAKAGE THROUGH LAYER 4	0.610095	138415.281	5.05
CHANGE IN WATER STORAGE	-0.459	-104203.047	-3.80
SOIL WATER AT START OF YEAR	56.527	12824462.000	
SOIL WATER AT END OF YEAR	56.067	12720259.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.243	0.00

JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC

PRECIPITATION	0.28 0.46	0.86 1.13	1.73 0.17	1.04 0.54	0.42 0.21	2.08 1.41
RUNOFF	0.000 0.000	0.000 0.000	0.005 0.000	0.000 0.000	0.000 0.000	0.000 0.000
EVAPOTRANSPIRATION	0.282 0.685	0.976 0.605	1.600 0.724	0.997 0.186	0.672 0.281	2.868 0.500
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0362 0.0329	0.0318 0.0327	0.0351 0.0301	0.0340 0.0314	0.0325 0.0300	0.0325 0.0308

ANNUAL TOTALS FOR YEAR 3

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.33	2343618.750	100.00
RUNOFF	0.005	1034.296	0.04
EVAPOTRANSPIRATION	10.376	2353995.750	100.44
PERC./LEAKAGE THROUGH LAYER 4	0.389932	88465.930	3.77
CHANGE IN WATER STORAGE	-0.440	-99876.469	-4.26
SOIL WATER AT START OF YEAR	55.370	12561977.000	
SOIL WATER AT END OF YEAR	54.001	12251558.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.928	210542.203	8.98
ANNUAL WATER BUDGET BALANCE	0.0000	-0.838	0.00

MONTHLY TOTALS (IN INCHES) FOR YEAR 4

JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC

PRECIPITATION	2.31 0.65	2.33 1.33	1.88 0.64	2.78 1.05	2.32 0.94	0.49 1.56
RUNOFF	1.541 0.000	0.187 0.000	0.002 0.000	0.319 0.000	0.008 0.000	0.000 0.158
EVAPOTRANSPIRATION	0.685 1.588	0.806 0.603	1.638 1.367	2.688 1.050	2.679 0.299	1.812 0.650
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0303 0.0284	0.0262 0.0272	0.0285 0.0252	0.0276 0.0270	0.0296 0.0254	0.0274 0.0259

ANNUAL TOTALS FOR YEAR 4

	INCHES	CU. FEET	PERCENT
PRECIPITATION	18.28	4147275.250	100.00
RUNOFF	2.216	502646.844	12.12
EVAPOTRANSPIRATION	15.863	3598860.000	86.78
PERC./LEAKAGE THROUGH LAYER 4	0.328396	74504.859	1.80
CHANGE IN WATER STORAGE	-0.127	-28735.941	-0.69
SOIL WATER AT START OF YEAR	54.001	12251558.000	
SOIL WATER AT END OF YEAR	54.781	12428448.000	
SNOW WATER AT START OF YEAR	0.928	210542.203	5.08
SNOW WATER AT END OF YEAR	0.022	4916.732	0.12
ANNUAL WATER BUDGET BALANCE	0.0000	-0.500	0.00

MONTHLY TOTALS (IN INCHES) FOR YEAR 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.99 0.50	1.26 0.00	2.28 1.13	1.33 0.60	2.23 0.71	0.95 0.78

RUNOFF	0.098 0.000	0.000 0.000	0.491 0.000	0.000 0.000	0.127 0.000	0.000 0.042
EVAPOTRANSPIRATION	0.597 1.402	0.795 0.040	1.670 1.130	1.765 0.399	2.461 0.410	1.485 0.407
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0266 0.0232	0.0234 0.0232	0.0255 0.0232	0.0242 0.0235	0.0250 0.0213	0.0222 0.0227

ANNUAL TOTALS FOR YEAR 5

	INCHES	CU. FEET	PERCENT
PRECIPITATION	12.76	2894924.750	100.00
RUNOFF	0.758	171872.828	5.94
EVAPOTRANSPIRATION	12.562	2850018.000	98.45
PERC./LEAKAGE THROUGH LAYER 4	0.283879	64405.152	2.22
CHANGE IN WATER STORAGE	-0.844	-191371.312	-6.61
SOIL WATER AT START OF YEAR	54.781	12428448.000	
SOIL WATER AT END OF YEAR	53.959	12241993.000	
SNOW WATER AT START OF YEAR	0.022	4916.732	0.17
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.298	0.00

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.90 0.50	1.42 1.39	1.91 0.70	1.49 1.02	1.53 0.73	0.98 1.26
STD. DEVIATIONS	0.83	0.67	0.29	0.74	0.90	0.67

	0.10	1.03	0.35	0.59	0.31	0.31
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RUNOFF

TOTALS	0.328	0.135	0.120	0.064	0.027	0.000
	0.000	0.006	0.000	0.001	0.000	0.040
STD. DEVIATIONS	0.680	0.214	0.212	0.143	0.056	0.000
	0.000	0.014	0.000	0.001	0.000	0.069

EVAPOTRANSPIRATION

TOTALS	0.489	0.842	1.625	1.690	1.683	1.866
	1.144	1.006	1.012	0.744	0.505	0.591
STD. DEVIATIONS	0.185	0.103	0.266	0.639	0.983	0.658
	0.397	0.904	0.253	0.579	0.245	0.150

PERCOLATION/LEAKAGE THROUGH LAYER 4

TOTALS	0.0394	0.0344	0.0375	0.0360	0.0362	0.0347
	0.0349	0.0347	0.0324	0.0335	0.0316	0.0326
STD. DEVIATIONS	0.0131	0.0109	0.0122	0.0116	0.0113	0.0115
	0.0105	0.0108	0.0093	0.0096	0.0095	0.0095

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 5

	INCHES		CU. FEET	PERCENT
PRECIPITATION	13.82	(3.144)	3135866.2	100.00
RUNOFF	0.721	(0.9044)	163621.37	5.218
EVAPOTRANSPIRATION	13.196	(2.3054)	2993943.25	95.474
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.41783	(0.12959)	94795.687	3.02295
CHANGE IN WATER STORAGE	-0.513	(0.2742)	-116493.79	-3.715

PEAK DAILY VALUES FOR YEARS	1 THROUGH	5
	(INCHES)	(CU. FT.)
PRECIPITATION	1.66	376612.500
RUNOFF	0.840	190535.7190
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.002384	540.88269
SNOW WATER	1.35	306033.0000
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.3302
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.2210

FINAL WATER STORAGE AT END OF YEAR 5

LAYER	(INCHES)	(VOL/VOL)
1	16.0888	0.2727
2	23.9481	0.3031
3	5.3341	0.2223
4	8.5882	0.3578
SNOW WATER	0.000	

**
** HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 3.04 (10 APRIL 1995)
DEVELOPED BY ENVIRONMENTAL LABORATORY
USAE WATERWAYS EXPERIMENT STATION
FOR USEPA RISK REDUCTION ENGINEERING LABORATORY
**

PRECIPITATION DATA FILE: C:\models\help3\RURALP2.D4
TEMPERATURE DATA FILE: C:\models\help3\RURALT2.D7
SOLAR RADIATION DATA FILE: C:\models\help3\RURALS2.D13
EVAPOTRANSPIRATION DATA: C:\models\help3\RURLET3.D11
SOIL AND DESIGN DATA FILE: C:\MODELS\HELP3\RURALSD2.D10
OUTPUT DATA FILE: C:\models\help3\rural5.OUT

TIME: 15:59 DATE: 4/ 1/1997

TITLE: Rural Landfill, San Juan County, UT

NOTE: INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.

LAYER 1

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 13

THICKNESS	=	59.00 INCHES
POROSITY	=	0.4300 VOL/VOL
FIELD CAPACITY	=	0.3210 VOL/VOL
WILTING POINT	=	0.2210 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2860 VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.33000003000E-04 CM/SEC

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 1.80
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 13

THICKNESS	=	79.00	INCHES
POROSITY	=	0.4300	VOL/VOL
FIELD CAPACITY	=	0.3210	VOL/VOL
WILTING POINT	=	0.2210	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.3159	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.330000003000E-04	CM/SEC

LAYER 3

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 10

THICKNESS	=	24.00	INCHES
POROSITY	=	0.3980	VOL/VOL
FIELD CAPACITY	=	0.2440	VOL/VOL
WILTING POINT	=	0.1360	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2374	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.119999997000E-03	CM/SEC

LAYER 4

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 15

THICKNESS	=	24.00	INCHES
POROSITY	=	0.4750	VOL/VOL
FIELD CAPACITY	=	0.3780	VOL/VOL
WILTING POINT	=	0.2650	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.3720	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.170000003000E-04	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
SOIL DATA BASE USING SOIL TEXTURE #13 WITH A
FAIR STAND OF GRASS, A SURFACE SLOPE OF 2.%
AND A SLOPE LENGTH OF 200. FEET.

SCS RUNOFF CURVE NUMBER	=	88.40	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	62.500	ACRES
EVAPORATIVE ZONE DEPTH	=	32.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	8.345	INCHES

UPPER LIMIT OF EVAPORATIVE STORAGE	=	13.760	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	7.072	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	56.459	INCHES
TOTAL INITIAL WATER	=	56.459	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
CEDAR CITY UTAH

STATION LATITUDE	=	37.50 DEGREES
MAXIMUM LEAF AREA INDEX	=	1.00
START OF GROWING SEASON (JULIAN DATE)	=	125
END OF GROWING SEASON (JULIAN DATE)	=	284
EVAPORATIVE ZONE DEPTH	=	32.0 INCHES
AVERAGE ANNUAL WIND SPEED	=	8.80 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	64.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	36.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	34.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	58.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SALT LAKE CITY UTAH

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-----	-----	-----	-----	-----	-----
1.35	1.33	1.72	2.21	1.47	0.97
0.72	0.92	0.89	1.14	1.22	1.37

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CEDAR CITY UTAH

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-----	-----	-----	-----	-----	-----
28.70	33.10	38.40	47.10	56.20	65.00
73.20	71.30	63.20	51.20	38.80	30.80

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CEDAR CITY UTAH
AND STATION LATITUDE = 37.50 DEGREES

WARNING: TEMPERATURE FOR YEAR 1974 USED WITH PRECIPITATION FOR YEAR 1

WARNING: SOLAR RADIATION FOR YEAR 1974 USED WITH PRECIPITATION FOR YEAR 1

MONTHLY TOTALS (IN INCHES) FOR YEAR 1

JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC

	-----	-----	-----	-----	-----	-----
PRECIPITATION	0.44	0.76	1.55	0.98	0.72	0.40
	0.49	1.63	0.76	2.00	0.97	1.39
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.003	0.000	0.000
EVAPOTRANSPIRATION	0.572	0.867	1.278	1.234	0.518	0.689
	1.328	1.386	1.050	1.410	0.763	0.832
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0570	0.0522	0.0534	0.0498	0.0547	0.0499
	0.0522	0.0499	0.0472	0.0483	0.0456	0.0455

ANNUAL TOTALS FOR YEAR 1

INCHES CU. FEET PERCENT

PRECIPITATION	12.09	2742919.000	100.00
RUNOFF	0.004	848.805	0.03
EVAPOTRANSPIRATION	11.926	2705774.250	98.65
PERC./LEAKAGE THROUGH LAYER 4	0.605598	137395.031	5.01
CHANGE IN WATER STORAGE	-0.446	-101287.312	-3.69
SOIL WATER AT START OF YEAR	56.459	12809065.000	
SOIL WATER AT END OF YEAR	56.012	12707778.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0008	188.143	0.01

WARNING: TEMPERATURE FOR YEAR 1975 USED WITH PRECIPITATION FOR YEAR 2

WARNING: SOLAR RADIATION FOR YEAR 1975 USED WITH PRECIPITATION FOR YEAR 2

MONTHLY TOTALS (IN INCHES) FOR YEAR 2

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.49 0.39	1.87 2.86	2.10 0.79	1.34 0.89	1.98 0.83	0.97 1.14
RUNOFF	0.000 0.000	0.558 0.025	0.112 0.000	0.001 0.000	0.001 0.000	0.000 0.000
EVAPOTRANSPIRATION	0.326 2.194	0.628 2.543	1.680 0.982	1.854 0.396	1.903 0.879	1.262 0.593
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0444 0.0389	0.0400 0.0385	0.0436 0.0380	0.0409 0.0382	0.0415 0.0355	0.0386 0.0357

ANNUAL TOTALS FOR YEAR 2

	INCHES	CU. FEET	PERCENT
PRECIPITATION	15.65	3550594.000	100.00
RUNOFF	0.696	157956.125	4.45
EVAPOTRANSPIRATION	15.241	3457696.250	97.38
PERC./LEAKAGE THROUGH LAYER 4	0.473896	107515.227	3.03
CHANGE IN WATER STORAGE	-0.761	-172573.484	-4.86
SOIL WATER AT START OF YEAR	56.012	12707778.000	
SOIL WATER AT END OF YEAR	55.252	12535205.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.325	0.00

WARNING: TEMPERATURE FOR YEAR 1976 USED WITH PRECIPITATION FOR YEAR 3

WARNING: SOLAR RADIATION FOR YEAR 1976 USED WITH PRECIPITATION FOR YEAR 3

MONTHLY TOTALS (IN INCHES) FOR YEAR 3

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.28 0.46	0.86 1.13	1.73 0.17	1.04 0.54	0.42 0.21	2.08 1.41
RUNOFF	0.000 0.000	0.000 0.000	0.007 0.000	0.000 0.000	0.000 0.000	0.001 0.000
EVAPOTRANSPIRATION	0.374 1.600	0.782 0.588	1.430 0.743	1.021 0.180	0.567 0.297	2.201 0.468
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0352 0.0324	0.0310 0.0316	0.0339 0.0301	0.0341 0.0315	0.0336 0.0298	0.0322 0.0304

ANNUAL TOTALS FOR YEAR 3

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.33	2343618.750	100.00
RUNOFF	0.007	1654.606	0.07
EVAPOTRANSPIRATION	10.250	2325492.500	99.23
PERC./LEAKAGE THROUGH LAYER 4	0.385941	87560.398	3.74
CHANGE IN WATER STORAGE	-0.314	-71153.070	-3.04
SOIL WATER AT START OF YEAR	55.252	12535205.000	
SOIL WATER AT END OF YEAR	54.039	12260015.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00

SNOW WATER AT END OF YEAR	0.899	204036.203	8.71
ANNUAL WATER BUDGET BALANCE	0.0003	64.254	0.00

WARNING: TEMPERATURE FOR YEAR 1977 USED WITH PRECIPITATION FOR YEAR 4

WARNING: SOLAR RADIATION FOR YEAR 1977 USED WITH PRECIPITATION FOR YEAR 4

MONTHLY TOTALS (IN INCHES) FOR YEAR 4

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	2.31 0.65	2.33 1.33	1.88 0.64	2.78 1.05	2.32 0.94	0.49 1.56
RUNOFF	1.440 0.000	0.193 0.000	0.001 0.000	0.306 0.000	0.012 0.000	0.000 0.039
EVAPOTRANSPIRATION	0.702 2.416	0.874 0.626	1.694 1.344	2.742 0.794	2.559 0.416	1.034 0.606
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0309 0.0280	0.0269 0.0272	0.0288 0.0259	0.0272 0.0271	0.0279 0.0252	0.0271 0.0261

ANNUAL TOTALS FOR YEAR 4

	INCHES	CU. FEET	PERCENT
PRECIPITATION	18.28	4147275.250	100.00
RUNOFF	1.991	451695.906	10.89
EVAPOTRANSPIRATION	15.807	3586260.000	86.47
PERC./LEAKAGE THROUGH LAYER 4	0.328188	74457.641	1.80
CHANGE IN WATER STORAGE	0.154	34861.250	0.84
SOIL WATER AT START OF YEAR	54.039	12260015.000	
SOIL WATER AT END OF YEAR	55.078	12495923.000	

SNOW WATER AT START OF YEAR	0.899	204036.203	4.92
SNOW WATER AT END OF YEAR	0.013	2989.652	0.07
ANNUAL WATER BUDGET BALANCE	0.0000	0.243	0.00

WARNING: TEMPERATURE FOR YEAR 1978 USED WITH PRECIPITATION FOR YEAR 5

WARNING: SOLAR RADIATION FOR YEAR 1978 USED WITH PRECIPITATION FOR YEAR 5

MONTHLY TOTALS (IN INCHES) FOR YEAR 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.99 0.50	1.26 0.00	2.28 1.13	1.33 0.60	2.23 0.71	0.95 0.78
RUNOFF	0.116 0.000	0.000 0.000	0.668 0.000	0.000 0.000	0.142 0.000	0.000 0.000
EVAPOTRANSPIRATION	0.559 2.268	0.808 0.018	1.498 1.130	1.679 0.223	2.425 0.378	1.027 0.468
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0250 0.0238	0.0227 0.0237	0.0241 0.0234	0.0243 0.0235	0.0253 0.0230	0.0222 0.0218

ANNUAL TOTALS FOR YEAR 5

	INCHES	CU. FEET	PERCENT
PRECIPITATION	12.76	2894924.750	100.00
RUNOFF	0.925	209814.094	7.25
EVAPOTRANSPIRATION	12.483	2832054.500	97.83
PERC./LEAKAGE THROUGH LAYER 4	0.282748	64148.449	2.22
CHANGE IN WATER STORAGE	-0.930	-211091.969	-7.29

SOIL WATER AT START OF YEAR	55.078	12495923.000	
SOIL WATER AT END OF YEAR	54.161	12287821.000	
SNOW WATER AT START OF YEAR	0.013	2989.652	0.10
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.352	0.00

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.90 0.50	1.42 1.39	1.91 0.70	1.49 1.02	1.53 0.73	0.98 1.26
STD. DEVIATIONS	0.83 0.10	0.67 1.03	0.29 0.35	0.74 0.59	0.90 0.31	0.67 0.31
RUNOFF						
TOTALS	0.311 0.000	0.150 0.005	0.157 0.000	0.061 0.001	0.031 0.000	0.000 0.008
STD. DEVIATIONS	0.633 0.000	0.243 0.011	0.289 0.000	0.137 0.001	0.062 0.000	0.000 0.017
EVAPOTRANSPIRATION						
TOTALS	0.507 1.961	0.792 1.032	1.516 1.050	1.706 0.601	1.594 0.547	1.243 0.593
STD. DEVIATIONS	0.155 0.471	0.099 0.974	0.175 0.219	0.669 0.514	0.991 0.258	0.574 0.149
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0385 0.0351	0.0346 0.0342	0.0368 0.0329	0.0353 0.0337	0.0366 0.0318	0.0340 0.0319
STD. DEVIATIONS	0.0125 0.0111	0.0118 0.0104	0.0118 0.0097	0.0104 0.0098	0.0119 0.0090	0.0108 0.0092

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS			1 THROUGH	5
	INCHES	CU. FEET	PERCENT	
PRECIPITATION	13.82 (3.144)	3135866.2	100.00	
RUNOFF	0.725 (0.8183)	164393.91	5.242	
EVAPOTRANSPIRATION	13.141 (2.3336)	2981455.50	95.076	
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.41527 (0.12813)	94215.344	3.00444	
CHANGE IN WATER STORAGE	-0.459 (0.4213)	-104248.91	-3.324	

PEAK DAILY VALUES FOR YEARS	1 THROUGH	5
	(INCHES)	(CU. FT.)
PRECIPITATION	1.66	376612.500
RUNOFF	0.638	144705.7500
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.002381	540.28436
SNOW WATER	1.13	257493.2810
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.3270
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.2210

FINAL WATER STORAGE AT END OF YEAR 5

LAYER	(INCHES)	(VOL/VOL)
1	16.2829	0.2760
2	23.9629	0.3033
3	5.3305	0.2221
4	8.5849	0.3577
SNOW WATER	0.000	

**
** HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
** HELP MODEL VERSION 3.04 (10 APRIL 1995)
** DEVELOPED BY ENVIRONMENTAL LABORATORY
** USAE WATERWAYS EXPERIMENT STATION
** FOR USEPA RISK REDUCTION ENGINEERING LABORATORY
**

PRECIPITATION DATA FILE: C:\models\help3\MONTIP1.D4
TEMPERATURE DATA FILE: C:\models\help3\MONTIT1.D7
SOLAR RADIATION DATA FILE: C:\models\help3\MONTIR1.D13
EVAPOTRANSPIRATION DATA: C:\models\help3\MONTIE1.D11
SOIL AND DESIGN DATA FILE: C:\MODELS\HELP3\RURALSD4.D10
OUTPUT DATA FILE: C:\models\help3\rural7.OUT

TIME: 17:58 DATE: 4/ 1/1997

TITLE: Rural Landfill, San Juan County, UT

NOTE: INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.

LAYER 1

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 13

THICKNESS	=	59.00	INCHES
POROSITY	=	0.4300	VOL/VOL
FIELD CAPACITY	=	0.3210	VOL/VOL
WILTING POINT	=	0.2210	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2865	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.330000003000E-04	CM/SEC

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 1.80
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 13

THICKNESS	=	79.00	INCHES
POROSITY	=	0.4300	VOL/VOL
FIELD CAPACITY	=	0.3210	VOL/VOL
WILTING POINT	=	0.2210	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.3235	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.330000003000E-04	CM/SEC

LAYER 3

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 10

THICKNESS	=	24.00	INCHES
POROSITY	=	0.3980	VOL/VOL
FIELD CAPACITY	=	0.2440	VOL/VOL
WILTING POINT	=	0.1360	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2441	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.119999997000E-03	CM/SEC

LAYER 4

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 15

THICKNESS	=	24.00	INCHES
POROSITY	=	0.4750	VOL/VOL
FIELD CAPACITY	=	0.3780	VOL/VOL
WILTING POINT	=	0.2650	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.3700	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.170000003000E-04	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
SOIL DATA BASE USING SOIL TEXTURE #13 WITH A
FAIR STAND OF GRASS, A SURFACE SLOPE OF 2.%
AND A SLOPE LENGTH OF 200. FEET.

SCS RUNOFF CURVE NUMBER	=	88.40	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	62.500	ACRES
EVAPORATIVE ZONE DEPTH	=	32.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	8.237	INCHES

UPPER LIMIT OF EVAPORATIVE STORAGE	=	13.760	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	7.072	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	57.201	INCHES
TOTAL INITIAL WATER	=	57.201	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
CEDAR CITY UTAH

STATION LATITUDE	=	37.50 DEGREES
MAXIMUM LEAF AREA INDEX	=	1.00
START OF GROWING SEASON (JULIAN DATE)	=	125
END OF GROWING SEASON (JULIAN DATE)	=	284
EVAPORATIVE ZONE DEPTH	=	32.0 INCHES
AVERAGE ANNUAL WIND SPEED	=	8.80 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	64.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	36.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	34.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	58.00 %

NOTE: PRECIPITATION DATA FOR SALT LAKE CITY UTAH
WAS ENTERED FROM THE DEFAULT DATA FILE.

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CEDAR CITY UTAH

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-----	-----	-----	-----	-----	-----
28.70	33.10	38.40	47.10	56.20	65.00
73.20	71.30	63.20	51.20	38.80	30.80

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CEDAR CITY UTAH
AND STATION LATITUDE = 37.50 DEGREES

MONTHLY TOTALS (IN INCHES) FOR YEAR 1974

JAN/FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC

PRECIPITATION	1.80 0.18	1.65 0.32	0.97 0.03	4.57 2.03	0.39 0.90	0.28 1.34
UNOFF	0.459 0.000	0.411 0.000	0.003 0.000	0.818 0.000	0.000 0.004	0.000 0.015
VAPOTRANSPIRATION	0.955 1.643	1.266 0.232	1.535 0.118	2.444 0.927	0.558 1.180	0.836 0.866
PERCOLATION/LEAKAGE THROUGH LAWNS	0.0442 0.0743	0.0336 0.0695	0.0257 0.0668	0.0573 0.0603	0.0755 0.0617	0.0748 0.0603

ANNUAL TOTALS FOR YEAR 1974

	INCHES	CU. FEET	PERCENT
PRECIPITATION	14.46	3280613.750	100.00
RUNOFF	1.709	387709.781	11.82
EVAPOTRANSPIRATION	12.558	2849184.250	86.85
PERC./LEAKAGE THROUGH LAYER 4	0.703966	159712.234	4.87
CHANGE IN WATER STORAGE	-0.511	-115993.203	-3.54
SOIL WATER AT START OF YEAR	57.201	12977397.000	
SOIL WATER AT END OF YEAR	56.689	12861404.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.757	0.00

MONTHLY TOTALS (IN INCHES) FOR YEAR 1975

JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC

PRECIPITATION	1.28 0.28	1.24 0.10	3.44 0.08	2.46 1.91	2.58 1.71	1.81 1.03
RUNOFF	0.010 0.000	0.198 0.000	0.271 0.000	0.080 0.000	0.004 0.000	0.000 0.008
EVAPOTRANSPIRATION	0.760 2.384	0.811 0.222	1.638 0.122	2.535 0.917	3.335 0.979	2.009 0.840
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0580 0.0563	0.0523 0.0543	0.0613 0.0434	0.0585 0.0491	0.0573 0.0443	0.0550 0.0457

ANNUAL TOTALS FOR YEAR 1975

	INCHES	CU. FEET	PERCENT
PRECIPITATION	17.92	4065601.000	100.00
RUNOFF	0.570	129388.617	3.18
EVAPOTRANSPIRATION	16.552	3755258.500	92.37
PERC./LEAKAGE THROUGH LAYER 4	0.635488	144176.422	3.55
CHANGE IN WATER STORAGE	0.162	36774.746	0.90
SOIL WATER AT START OF YEAR	56.689	12861404.000	
SOIL WATER AT END OF YEAR	56.708	12865566.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.144	32612.750	0.80
ANNUAL WATER BUDGET BALANCE	0.0000	2.705	0.00

MONTHLY TOTALS (IN INCHES) FOR YEAR 1976

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.63 1.55	1.90 0.82	1.90 0.16	2.47 0.57	0.99 0.03	1.24 0.08

RUNOFF	0.069 0.000	0.000 0.000	0.308 0.000	0.000 0.000	0.000 0.000	
EVAPOTRANSPIRATION	0.534 2.104	1.452 0.938	1.993 0.723	2.145 0.521	1.174 0.080	2.120 0.063
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0467 0.0451	0.0420 0.0411	0.0457 0.0418	0.0441 0.0408	0.0450 0.0403	0.0440 0.0406

ANNUAL TOTALS FOR YEAR 1976

	INCHES	CU. FEET	PERCENT
PRECIPITATION	12.34	2799637.750	100.00
RUNOFF	0.377	85583.055	3.06
EVAPOTRANSPIRATION	13.848	3141843.500	112.22
PERC./LEAKAGE THROUGH LAYER 4	0.517336	117370.516	4.19
CHANGE IN WATER STORAGE	-2.404	-545416.500	-19.48
SOIL WATER AT START OF YEAR	56.708	12865566.000	
SOIL WATER AT END OF YEAR	54.447	12352762.000	
SNOW WATER AT START OF YEAR	0.144	32612.750	1.16
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0011	257.244	0.01

MONTHLY TOTALS (IN INCHES) FOR YEAR 1977

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
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PRECIPITATION	0.76 0.61	0.64 1.85	3.10 1.64	0.59 1.02	4.76 1.22	0.06 1.42
RUNOFF	0.139 0.000	0.000 0.027	0.052 0.000	0.000 0.000	0.199 0.000	0.000 0.367

EVAPOTRANSPIRATION	0.170	0.488	1.508	1.651	2.952	1.601
	1.750	0.818	2.448	1.162	0.481	0.654
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0396	0.0363	0.0388	0.0381	0.0376	0.0358
	0.0357	0.0349	0.0326	0.0351	0.0334	0.0337

ANNUAL TOTALS FOR YEAR 1977

	INCHES	CU. FEET	PERCENT
PRECIPITATION	17.67	4008882.500	100.00
RUNOFF	0.783	177714.328	4.43
EVAPOTRANSPIRATION	15.682	3557789.750	88.75
PERC./LEAKAGE THROUGH LAYER 4	0.431556	97909.172	2.44
CHANGE IN WATER STORAGE	0.773	175468.141	4.38
SOIL WATER AT START OF YEAR	54.447	12352762.000	
SOIL WATER AT END OF YEAR	55.107	12502301.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.114	25929.736	0.65
ANNUAL WATER BUDGET BALANCE	0.0000	1.176	0.00

MONTHLY TOTALS (IN INCHES) FOR YEAR 1978

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	2.33	1.96	3.11	3.21	1.62	0.06
	0.06	0.92	2.51	0.00	1.49	0.82
RUNOFF	1.170	0.839	0.967	0.006	0.015	0.000
	0.000	0.001	0.211	0.000	0.000	0.000
EVAPOTRANSPIRATION	0.640	0.765	1.476	2.891	2.539	0.944
	1.316	0.214	1.876	1.129	0.476	0.750

PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0331	0.0298	0.0330	0.0319	0.0314	0.0299
	0.0303	0.0296	0.0289	0.0296	0.0290	0.0290

ANNUAL TOTALS FOR YEAR 1978

	INCHES	CU. FEET	PERCENT
PRECIPITATION	18.09	4104170.500	100.00
RUNOFF	3.209	728027.312	17.74
EVAPOTRANSPIRATION	15.016	3406688.500	83.01
PERC./LEAKAGE THROUGH LAYER 4	0.365405	82901.273	2.02
CHANGE IN WATER STORAGE	-0.500	-113448.453	-2.76
SOIL WATER AT START OF YEAR	55.107	12502301.000	
SOIL WATER AT END OF YEAR	54.721	12414782.000	
SNOW WATER AT START OF YEAR	0.114	25929.736	0.63
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	1.873	0.00

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1974 THROUGH 1978

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	-----	-----	-----	-----	-----	-----
TOTALS	1.36	1.48	2.50	2.66	2.07	0.69
	0.54	0.80	0.88	1.11	1.07	0.94
STD. DEVIATIONS	0.71	0.55	1.04	1.44	1.71	0.79
	0.60	0.68	1.13	0.87	0.66	0.54
RUNOFF	-----	-----	-----	-----	-----	-----
TOTALS	0.369	0.289	0.259	0.243	0.043	0.000
	0.000	0.006	0.042	0.000	0.001	0.078

STD. DEVIATIONS	0.480 0.000	0.351 0.012	0.411 0.094	0.345 0.000	0.087 0.002	0.000 0.162
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EVAPOTRANSPIRATION

TOTALS	0.612 1.839	0.957 0.485	1.630 1.057	2.333 0.931	2.112 0.639	1.502 0.635
--------	----------------	----------------	----------------	----------------	----------------	----------------

STD. DEVIATIONS	0.292 0.415	0.393 0.361	0.212 1.057	0.465 0.255	1.191 0.439	0.592 0.330
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PERCOLATION/LEAKAGE THROUGH LAYER 4

TOTALS	0.0443 0.0484	0.0388 0.0459	0.0409 0.0427	0.0460 0.0430	0.0494 0.0417	0.0479 0.0419
--------	------------------	------------------	------------------	------------------	------------------	------------------

STD. DEVIATIONS	0.0092 0.0175	0.0087 0.0161	0.0136 0.0148	0.0117 0.0121	0.0175 0.0126	0.0177 0.0121
-----------------	------------------	------------------	------------------	------------------	------------------	------------------

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1974 THROUGH 1978

	INCHES	CU. FEET	PERCENT
PRECIPITATION	16.10 (2.577)	3651781.0	100.00
RUNOFF	1.330 (1.1681)	301684.62	8.261
EVAPOTRANSPIRATION	14.731 (1.5653)	3342152.75	91.521
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.53075 (0.13994)	120413.930	3.29740
CHANGE IN WATER STORAGE	-0.496 (1.1922)	-112523.05	-3.081

PEAK DAILY VALUES FOR YEARS 1974 THROUGH 1978

	(INCHES)	(CU. FT.)
PRECIPITATION	1.62	367537.500
RUNOFF	0.954	216353.0470
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.003520	798.53680
SNOW WATER	1.31	297396.4370
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.3465
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.2210

FINAL WATER STORAGE AT END OF YEAR 1978

LAYER	(INCHES)	(VOL/VOL)
1	16.4278	0.2784
2	24.2048	0.3064
3	5.4195	0.2258
4	8.6687	0.3612
SNOW WATER	0.000	

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 3.04 (10 APRIL 1995)
DEVELOPED BY ENVIRONMENTAL LABORATORY
USAE WATERWAYS EXPERIMENT STATION
FOR USEPA RISK REDUCTION ENGINEERING LABORATORY

PRECIPITATION DATA FILE: C:\models\help3\MONTIP1.D4
TEMPERATURE DATA FILE: C:\models\help3\MONTIT1.D7
SOLAR RADIATION DATA FILE: C:\models\help3\MONTIR1.D13
EVAPOTRANSPIRATION DATA: C:\models\help3\MONTIE1.D11
SOIL AND DESIGN DATA FILE: C:\MODELS\HELP3\MONTISD1.D10
OUTPUT DATA FILE: C:\models\help3\rural8.OUT

TIME: 18:20 DATE: 4/ 1/1997

TITLE: Rural Landfill, San Juan County, UT

NOTE: INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.

LAYER 1

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 13

THICKNESS = 59.00 INCHES
POROSITY = 0.4300 VOL/VOL
FIELD CAPACITY = 0.3210 VOL/VOL
WILTING POINT = 0.2210 VOL/VOL
INITIAL SOIL WATER CONTENT = 0.2865 VOL/VOL
EFFECTIVE SAT. HYD. COND. = 0.33000003000E-04 CM/SEC

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 1.80
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 13

THICKNESS = 79.00 INCHES
POROSITY = 0.4300 VOL/VOL
FIELD CAPACITY = 0.3210 VOL/VOL
WILTING POINT = 0.2210 VOL/VOL
INITIAL SOIL WATER CONTENT = 0.3257 VOL/VOL
EFFECTIVE SAT. HYD. COND. = 0.330000003000E-04 CM/SEC

LAYER 3

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 10

THICKNESS = 24.00 INCHES
POROSITY = 0.3980 VOL/VOL
FIELD CAPACITY = 0.2440 VOL/VOL
WILTING POINT = 0.1360 VOL/VOL
INITIAL SOIL WATER CONTENT = 0.2537 VOL/VOL
EFFECTIVE SAT. HYD. COND. = 0.119999997000E-03 CM/SEC

LAYER 4

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 15

THICKNESS = 24.00 INCHES
POROSITY = 0.4750 VOL/VOL
FIELD CAPACITY = 0.3780 VOL/VOL
WILTING POINT = 0.2650 VOL/VOL
INITIAL SOIL WATER CONTENT = 0.3735 VOL/VOL
EFFECTIVE SAT. HYD. COND. = 0.170000003000E-04 CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
SOIL DATA BASE USING SOIL TEXTURE #13 WITH A
GOOD STAND OF GRASS, A SURFACE SLOPE OF 2.%
AND A SLOPE LENGTH OF 200. FEET.

SCS RUNOFF CURVE NUMBER = 84.10
FRACTION OF AREA ALLOWING RUNOFF = 100.0 PERCENT
AREA PROJECTED ON HORIZONTAL PLANE = 62.500 ACRES
EVAPORATIVE ZONE DEPTH = 32.0 INCHES
INITIAL WATER IN EVAPORATIVE ZONE = 8.238 INCHES

UPPER LIMIT OF EVAPORATIVE STORAGE	=	13.760	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	7.072	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	57.689	INCHES
TOTAL INITIAL WATER	=	57.689	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
CEDAR CITY UTAH

STATION LATITUDE	=	37.50 DEGREES
MAXIMUM LEAF AREA INDEX	=	1.00
START OF GROWING SEASON (JULIAN DATE)	=	125
END OF GROWING SEASON (JULIAN DATE)	=	284
EVAPORATIVE ZONE DEPTH	=	32.0 INCHES
AVERAGE ANNUAL WIND SPEED	=	8.80 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	64.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	36.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	34.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	58.00 %

NOTE: PRECIPITATION DATA FOR SALT LAKE CITY UTAH
WAS ENTERED FROM THE DEFAULT DATA FILE.

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CEDAR CITY UTAH

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-----	-----	-----	-----	-----	-----
28.70	33.10	38.40	47.10	56.20	65.00
73.20	71.30	63.20	51.20	38.80	30.80

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CEDAR CITY UTAH
AND STATION LATITUDE = 37.50 DEGREES

MONTHLY TOTALS (IN INCHES) FOR YEAR 1974

JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC

PRECIPITATION	1.80 0.18	1.65 0.32	0.97 0.03	4.57 2.03	0.39 0.90	0.28 1.34
RUNOFF	0.459 0.000	0.411 0.000	0.000 0.000	0.595 0.000	0.000 0.000	0.000 0.015
EVAPOTRANSPIRATION	0.955 1.935	1.268 0.238	1.537 0.112	2.453 0.934	0.556 1.175	0.834 0.867
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0563 0.0828	0.0101 0.0782	0.0967 0.0748	0.1029 0.0761	0.2316 0.0711	0.081 0.070

ANNUAL TOTALS FOR YEAR 1974

	INCHES	CU. FEET	PERCENT
PRECIPITATION	14.46	3280613.750	100.00
RUNOFF	1.479	335469.844	10.23
EVAPOTRANSPIRATION	12.865	2918740.000	88.97
PERC./LEAKAGE THROUGH LAYER 4	1.032948	234350.047	7.14
CHANGE IN WATER STORAGE	-0.917	-207948.266	-6.34
SOIL WATER AT START OF YEAR	57.689	13088120.000	
SOIL WATER AT END OF YEAR	56.772	12880172.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	2.055	0.00

MONTHLY TOTALS (IN INCHES) FOR YEAR 1975

JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC

PRECIPITATION	1.28 0.28	1.24 0.10	3.44 0.08	2.46 1.91	2.58 1.71	1.81 1.03
RUNOFF	0.010 0.000	0.198 0.000	0.135 0.000	0.014 0.000	0.000 0.000	0.000 0.008
EVAPOTRANSPIRATION	0.760 2.215	0.811 0.206	1.642 0.122	2.537 0.766	3.338 0.909	2.234 0.857
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0669 0.0610	0.0571 0.0536	0.0629 0.0502	0.0613 0.0354	0.0608 0.0491	0.0573 0.0495

ANNUAL TOTALS FOR YEAR 1975

	INCHES	CU. FEET	PERCENT
PRECIPITATION	17.92	4065601.000	100.00
RUNOFF	0.365	82836.305	2.04
EVAPOTRANSPIRATION	16.396	3719846.750	91.50
PERC./LEAKAGE THROUGH LAYER 4	0.665126	150900.453	3.71
CHANGE IN WATER STORAGE	0.494	112015.195	2.76
SOIL WATER AT START OF YEAR	56.772	12880172.000	
SOIL WATER AT END OF YEAR	57.122	12959574.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.144	32612.750	0.80
ANNUAL WATER BUDGET BALANCE	0.0000	2.123	0.00

MONTHLY TOTALS (IN INCHES) FOR YEAR 1976

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.63 1.55	1.90 0.82	1.90 0.16	2.47 0.57	0.99 0.03	1.24 0.08

RUNOFF	0.071 0.000	0.000 0.000	0.000 0.000	0.150 0.000	0.000 0.000	0.000 0.000
EVAPOTRANSPIRATION	0.536 2.288	1.456 0.932	2.024 0.735	2.203 0.568	1.174 0.036	2.181 0.063
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0487 0.0453	0.0417 0.0428	0.0475 0.0429	0.0463 0.0417	0.0474 0.0404	0.0433 0.0430

ANNUAL TOTALS FOR YEAR 1976

	INCHES	CU. FEET	PERCENT
PRECIPITATION	12.34	2799637.750	100.00
RUNOFF	0.220	49973.137	1.78
EVAPOTRANSPIRATION	14.194	3220209.750	115.02
PERC./LEAKAGE THROUGH LAYER 4	0.530989	120468.141	4.30
CHANGE IN WATER STORAGE	-2.606	-591272.000	-21.12
SOIL WATER AT START OF YEAR	57.122	12959574.000	
SOIL WATER AT END OF YEAR	54.660	12400915.000	
SNOW WATER AT START OF YEAR	0.144	32612.750	1.16
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0011	258.772	0.01

MONTHLY TOTALS (IN INCHES) FOR YEAR 1977

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.76 0.61	0.64 1.85	3.10 1.64	0.59 1.02	4.76 1.22	0.06 1.42
RUNOFF	0.139 0.000	0.000 0.000	0.003 0.000	0.000 0.000	0.079 0.000	0.000 0.366

EVAPOTRANSPIRATION	0.172	0.378	1.617	1.588	3.152	1.632
	1.754	0.858	2.467	1.122	0.465	0.692
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.0419	0.0370	0.0391	0.0387	0.0394	0.0360
	0.0396	0.0383	0.0378	0.0370	0.0361	0.0358

ANNUAL TOTALS FOR YEAR 1977

	INCHES	CU. FEET	PERCENT
PRECIPITATION	17.67	4008882.500	100.00
RUNOFF	0.586	132955.484	3.32
EVAPOTRANSPIRATION	15.896	3606346.250	89.96
PERC./LEAKAGE THROUGH LAYER 4	0.456939	103668.070	2.59
CHANGE IN WATER STORAGE	0.731	165910.875	4.14
SOIL WATER AT START OF YEAR	54.660	12400915.000	
SOIL WATER AT END OF YEAR	55.277	12540896.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.114	25929.736	0.65
ANNUAL WATER BUDGET BALANCE	0.0000	2.001	0.00

MONTHLY TOTALS (IN INCHES) FOR YEAR 1978

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	2.33	1.96	3.11	3.21	1.62	0.06
	0.06	0.92	2.51	0.00	1.49	0.82
RUNOFF	1.166	0.833	0.955	0.000	0.000	0.000
	0.000	0.000	0.089	0.000	0.000	0.000
EVAPOTRANSPIRATION	0.648	0.832	1.615	3.110	2.300	0.927
	1.168	0.204	1.929	1.208	0.447	0.819

PERCOLATION/LEAKAGE THRCUGH
LAYER 4 0.0356 0.0312 0.0339 0.0339 0.0348 0.0333
 0.0327 0.0325 0.0299 0.0316 0.0297 0.0313

ANNUAL TOTALS FOR YEAR 1978

	INCHES	CU. FEET	PERCENT
PRECIPITATION	18.09	4104170.500	100.00
RUNOFF	3.043	690319.312	16.82
EVAPOTRANSPIRATION	15.208	3450209.250	84.07
PERC./LEAKAGE THROUGH LAYER 4	0.390292	88547.469	2.16
CHANGE IN WATER STORAGE	-0.551	-124907.133	-3.04
SOIL WATER AT START OF YEAR	55.277	12540896.000	
SOIL WATER AT END OF YEAR	54.840	12441919.000	
SNOW WATER AT START OF YEAR	0.114	25929.736	0.63
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	1.609	0.00

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1974 THROUGH 1978

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	1.36 0.54	1.48 0.80	2.50 0.88	2.66 1.11	2.07 1.07	0.69 0.94
STD. DEVIATIONS	0.71 0.60	0.55 0.68	1.04 1.13	1.44 0.87	1.71 0.66	0.79 0.54
RUNOFF						
TOTALS	0.369 0.000	0.288 0.000	0.219 0.018	0.152 0.000	0.016 0.000	0.000 0.078

STD. DEVIATIONS	0.478 0.000	0.349 0.000	0.416 0.040	0.256 0.000	0.035 0.000	0.000 0.161
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EVAPOTRANSPIRATION

TOTALS	0.614 1.872	0.949 0.488	1.687 1.073	2.378 0.920	2.104 0.606	1.561 0.660
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STD. DEVIATIONS	0.292 0.448	0.424 0.373	0.192 1.075	0.553 0.260	1.217 0.443	0.665 0.341
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PERCOLATION/LEAKAGE THROUGH LAYER 4

TOTALS	0.0499 0.0523	0.0354 0.0491	0.0560 0.0471	0.0566 0.0444	0.0828 0.0453	0.0504 0.0461
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STD. DEVIATIONS	0.0122 0.0200	0.0171 0.0180	0.0252 0.0171	0.0279 0.0181	0.0838 0.0160	0.0199 0.0154
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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1974 THROUGH 1978

	INCHES	CU. FEET	PERCENT
PRECIPITATION	16.10 (2.577)	3651781.0	100.00
RUNOFF	1.139 (1.1714)	258310.81	7.074
EVAPOTRANSPIRATION	14.912 (1.4110)	3383070.25	92.642
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.61526 (0.25482)	139586.844	3.82243
CHANGE IN WATER STORAGE	-0.570 (1.3315)	-129240.27	-3.539

PEAK DAILY VALUES FOR YEARS 1974 THROUGH 1978

	(INCHES)	(CU. FT.)
PRECIPITATION	1.62	367537.500
RUNOFF	0.951	215791.7030
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.012635	2866.57983
SNOW WATER	1.31	297396.4370
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.3507
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.2210

FINAL WATER STORAGE AT END OF YEAR 1978

LAYER	(INCHES)	(VOL/VOL)
1	16.4163	0.2782
2	24.2863	0.3074
3	5.4451	0.2269
4	8.6927	0.3622
SNOW WATER	0.000	

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Appendix D

**Recycling or Reusing Potentially
Contaminated Structural Steel Scenario**

RESRAD-RECYCLE Report

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Nuclide Concentrations and Dose Conversion Factors

Nuclide	Half Life yr	Avg Decay Factor	Ingestion DCF mrem/pCi	Inhalation DCF mrem/pCi	Concentration pCi/g
U-234	2.45E+05	1.00E+00	2.83E-04	1.32E-01	7.78E-01
U-235	7.04E+08	1.00E+00	2.67E-04	1.23E-01	3.50E-02
U-238	4.47E+09	1.00E+00	2.69E-04	1.18E-01	7.41E-01

Note 1: Internal dose conversion factors are taken from U.S. EPA FGR No. 11 (Ekerman et al., 1988).

Note 2: Average decay factor represents the average fraction of activity present over one year.

Note 3: For surface reuse scenarios, the concentration is in pCi/cm².

Percentage Partitioning Factors

Nuclide	Ingot	Air	Slag
U-234	8.0	2.0	90.0
U-235	8.0	2.0	90.0
U-238	8.0	2.0	90.0

Input Parameters of Selected Scenarios

Scenario	Dilution Fraction	Exp Time hr	Dust Load g/m3	Resp Fract	Inh Rate m3/hr	Inh Protec Factor	Ing Ra g/hr
Scrap Delivery: Scrap Cutter	1.00E+00	1.20E+01	1.00E-04	1.00E-01	2.50E+00	1.00E+00	6.25E-
Scrap Smelting: Scrap Processor	1.00E+00	1.20E+01	1.00E-02	1.00E-01	2.50E+00	1.00E+00	6.25E-
Scrap Smelting: Ingot Caster	1.00E+00	2.50E+00	1.00E-02	1.00E-01	2.50E+00	1.00E+00	6.25E-
Scrap Smelting: Slag Worker	1.00E+00	2.50E+01	1.00E-02	1.00E-01	2.50E+00	1.00E+00	6.25E-
Consumer Product: Appliance	1.00E+00	7.30E+02	0.00E+00	1.00E-01	0.00E+00	1.00E+00	0.00E+
Consumer Product: Office Furniture	1.00E+00	2.00E+03	0.00E+00	1.00E-01	0.00E+00	1.00E+00	0.00E+
Consumer Product: Home Furniture	1.00E+00	3.65E+03	0.00E+00	1.00E-01	0.00E+00	1.00E+00	0.00E+
Reuse Product: Building Reuse	1.00E-02	2.00E+03	1.00E-06	1.00E-01	2.50E+00	1.00E+00	1.00E-
Scrap Transportation: Public Exposure	1.00E+00	1.00E+00	0.00E+00	1.00E-01	0.00E+00	1.00E+00	0.00E+

Note: For surface reuse scenarios, the dust load is the emission rate in (1/hr), the ingestion rate is in (m²/hr), and the dilution represents a surface transfer factor applied to inhalation and ingestion doses only.

Input Parameters of Selected Scenarios (cont)

Scenario	Decay T yr	Pop Time hr	# People	Prod Life yr	% Mass Distribution
Scrap Delivery: Scrap Cutter	0.00E+00	1.20E+01	3.00E+00	1.00E+00	1.00E+02
Scrap Smelting: Scrap Processor	0.00E+00	1.20E+01	3.00E+00	1.00E+00	1.00E+02
Scrap Smelting: Ingot Caster	0.00E+00	2.50E+00	2.00E+00	1.00E+00	1.00E+02
Scrap Smelting: Slag Worker	0.00E+00	2.50E+01	1.00E+00	1.00E+00	1.00E+02
Consumer Product: Appliance	0.00E+00	7.30E+02	4.30E+03	1.00E+01	8.00E+00
Consumer Product: Office Furniture	0.00E+00	2.00E+03	7.00E+03	1.00E+01	8.00E+00
Consumer Product: Home Furniture	0.00E+00	3.65E+03	6.00E+03	1.00E+01	8.00E+00
Reuse Product: Building Reuse	0.00E+00	2.00E+03	4.00E+00	3.00E+01	1.00E+02
Scrap Transportation: Public Exposure	0.00E+00	1.00E+02	3.86E+03	1.00E+00	1.00E+02

External Source Modeling Parameters

Scenario

Scrap Delivery: Scrap Cutter
Scrap Smelting: Scrap Processor
Scrap Smelting: Ingot Caster
Scrap Smelting: Slag Worker
Consumer Product: Appliance
Consumer Product: Office Furniture
Consumer Product: Home Furniture
Reuse Product: Building Reuse
Scrap Transportation: Public Exposure

Source Type	Geometry Applied
volume	default
surface	default
volume	default

Total Activity Released to the Atmosphere
Mass = 3.00E-03 tons

Nuclide	Activity (pCi)
U-234	4.67E+01
U-235	2.10E+00
U-238	4.45E+01
<hr/>	
Total	9.32E+01

Total Activity in Slag for Disposal Option
Mass = 9.00E+00 tons

Nuclide	Activity (pCi)
U-234	7.00E+07
U-235	3.15E+06
U-238	6.67E+07
Total	1.40E+08

Total Activity in Baghouse for Disposal Option
Mass = 9.97E-01 tons

Nuclide	Activity (pCi)
U-234	1.56E+06
U-235	7.00E+04
U-238	1.48E+06
<hr/> Total	<hr/> 3.11E+06

**Effective Dose Equivalents for
Scrap Delivery: Scrap Cutter
(mrem & person-rem)**

Ingestion			Inhalation			External			All Pathways			Collective			Cumulative		
Nuclide	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose
U-234	1.71E-05	0.1851	3.09E-05	0.3341	2.43E-10	0.0000	4.80E-05	0.5192	1.44E-07	0.5192	1.44E-07	0.5192					
U-235	7.25E-07	0.0078	1.29E-06	0.0139	7.38E-08	0.0008	2.09E-06	0.0226	6.27E-09	0.0226	6.27E-09	0.0226					
U-238	1.55E-05	0.1674	2.63E-05	0.2844	5.97E-07	0.0065	4.24E-05	0.4582	1.27E-07	0.4582	1.27E-07	0.4582					
Total	3.33E-05	0.3603	5.85E-05	0.6324	6.71E-07	0.0073	9.25E-05	1.0000	2.78E-07	1.0000	2.78E-07	1.0000					

Effective Dose Equivalents for
Scrap Smelting: Scrap Processor
(mrem & person-rem)

	Ingestion		Inhalation		External		All Pathways		Collective		Cumulative	
Nuclide	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.
U-234	1.52E-06	0.0126	6.18E-05	0.5123	2.43E-10	0.0000	6.34E-05	0.5249	1.90E-07	0.5249	1.90E-07	0.5249
U-235	6.44E-08	0.0005	2.58E-06	0.0214	7.42E-08	0.0006	2.72E-06	0.0225	8.15E-09	0.0225	8.15E-09	0.0225
U-238	1.38E-06	0.0114	5.26E-05	0.4361	6.08E-07	0.0050	5.46E-05	0.4526	1.64E-07	0.4526	1.64E-07	0.4526
Total	2.96E-06	0.0245	1.17E-04	0.9698	6.83E-07	0.0057	1.21E-04	1.0000	3.62E-07	1.0000	3.62E-07	1.0000

Effective Dose Equivalents for
Scrap Smelting: Ingot Caster
(mrem & person-rem)

Ingestion			Inhalation			External			All Pathways			Collective			Cumulative		
Nuclide	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose
U-234	3.17E-07	0.0126	1.29E-05	0.5114	6.66E-11	0.0000	1.32E-05	0.5240	2.64E-08	0.5240	2.64E-08	0.5240	2.64E-08	0.5240	2.64E-08	0.5240	
U-235	1.34E-08	0.0005	5.37E-07	0.0213	2.00E-08	0.0008	5.71E-07	0.0227	1.14E-09	0.0227	1.14E-09	0.0227	1.14E-09	0.0227	1.14E-09	0.0227	
U-238	2.87E-07	0.0114	1.10E-05	0.4354	1.65E-07	0.0065	1.14E-05	0.4533	2.28E-08	0.4533	2.28E-08	0.4533	2.28E-08	0.4533	2.28E-08	0.4533	
Total	6.17E-07	0.0245	2.44E-05	0.9682	1.85E-07	0.0073	2.52E-05	1.0000	5.04E-08	1.0000	5.04E-08	1.0000	5.04E-08	1.0000	5.04E-08	1.0000	

**Effective Dose Equivalents for
Scrap Smelting: Slag Worker
(mrem & person-rem)**

Nuclide	Ingestion		Inhalation		External		All Pathways		Collective		Cumulative	
	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.
U-234	1.58E-03	0.0126	6.44E-02	0.5128	2.07E-07	0.0000	6.60E-02	0.5254	6.60E-05	0.5254	6.60E-05	0.5254
U-235	6.71E-05	0.0005	2.69E-03	0.0214	6.33E-05	0.0005	2.82E-03	0.0224	2.82E-06	0.0224	2.82E-06	0.0224
U-238	1.43E-03	0.0114	5.48E-02	0.4366	5.23E-04	0.0042	5.68E-02	0.4521	5.68E-05	0.4521	5.68E-05	0.4521
Total	3.08E-03	0.0246	1.22E-01	0.9708	5.87E-04	0.0047	1.26E-01	1.0000	1.26E-04	1.0000	1.26E-04	1.0000

Effective Dose Equivalents for
Consumer Product: Appliance
(mrem & person-rem)

Nuclide	Ingestion		Inhalation		External		All Pathways		Collective		Cumulative	
	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	2.27E-08	0.0049	2.27E-08	0.0049	7.81E-09	0.0049	7.80E-08	0.0049
U-235	0.000E+00	0.0000	0.000E+00	0.0000	9.69E-07	0.2086	9.69E-07	0.2086	3.33E-07	0.2086	3.33E-06	0.2086
U-238	0.000E+00	0.0000	0.000E+00	0.0000	3.65E-06	0.7866	3.65E-06	0.7866	1.26E-06	0.7866	1.26E-05	0.7866
Total	0.000E+00	0.0000	0.000E+00	0.0000	4.65E-06	1.0000	4.65E-06	1.0000	1.60E-06	1.0000	1.60E-05	1.0000

Note: Ingestion and inhalation pathways do not apply for this scenario.

**Effective Dose Equivalents for
Consumer Product: Office Furniture
(mrem & person-rem)**

Ingestion			Inhalation			External		All Pathways		Collective		Cumulative	
Nuclide	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	
U-234	0.00E+00	0.0000	0.00E+00	0.0000	2.68E-07	0.0035	2.68E-07	0.0035	1.50E-07	0.0035	1.50E-06	0.0035	
U-235	0.00E+00	0.0000	0.00E+00	0.0000	1.69E-05	0.2236	1.69E-05	0.2236	9.49E-06	0.2236	9.48E-05	0.2236	
U-238	0.00E+00	0.0000	0.00E+00	0.0000	5.86E-05	0.7728	5.86E-05	0.7728	3.28E-05	0.7728	3.28E-04	0.7728	
Total	0.00E+00	0.0000	0.00E+00	0.0000	7.58E-05	1.0000	7.58E-05	1.0000	4.24E-05	1.0000	4.24E-04	1.0000	

Note: Ingestion and inhalation pathways do not apply for this scenario.

**Effective Dose Equivalents for
Consumer Product: Home Furniture
(mrem & person-rem)**

Ingestion			Inhalation			External		All Pathways		Collective		Cumulative	
Nuclide	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	
U-234	0.00E+00	0.0000	0.00E+00	0.0000	4.96E-07	0.0035	4.96E-07	0.0035	2.38E-07	0.0035	2.38E-06	0.0035	
U-235	0.00E+00	0.0000	0.00E+00	0.0000	3.19E-05	0.2242	3.19E-05	0.2242	1.53E-05	0.2242	1.53E-04	0.2242	
U-238	0.00E+00	0.0000	0.00E+00	0.0000	1.10E-04	0.7723	1.10E-04	0.7723	5.28E-05	0.7723	5.27E-04	0.7723	
Total	0.00E+00	0.0000	0.00E+00	0.0000	1.42E-04	1.0000	1.42E-04	1.0000	6.83E-05	1.0000	6.83E-04	1.0000	

Note: Ingestion and inhalation pathways do not apply for this scenario.

Effective Dose Equivalents for
Reuse Product: Building Reuse
(mrem & person-rem)

Ingestion			Inhalation			External		All Pathways		Collective		Cumulative	
Nuclide	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	
U-234	4.41E-03	0.4324	2.01E-05	0.0020	7.31E-05	0.0072	4.50E-03	0.4415	1.80E-05	0.4415	5.40E-04	0.4414	
U-235	1.87E-04	0.0183	8.37E-07	0.0001	3.05E-04	0.0299	4.92E-04	0.0483	1.97E-06	0.0483	5.94E-05	0.0486	
U-238	3.99E-03	0.3909	1.71E-05	0.0017	1.20E-03	0.1177	5.20E-03	0.5102	2.08E-05	0.5102	6.24E-04	0.5100	
Total	8.58E-03	0.8416	3.80E-05	0.0037	1.58E-03	0.1547	1.02E-02	1.0000	4.08E-05	1.0000	1.22E-03	1.0000	

**Effective Dose Equivalents for
Scrap Transportation: Public Exposure
(mrem & person-rem)**

Ingestion			Inhalation		External		All Pathways		Collective		Cumulative	
Nuclide	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.
U-234	0.00E+00	0.0000	0.00E+00	0.0000	0.00E+00	0.0000	0.00E+00	0.0000	4.97E-14	0.0001	4.97E-14	0.0001
U-235	0.00E+00	0.0000	0.00E+00	0.0000	0.00E+00	0.0000	0.00E+00	0.0000	6.50E-11	0.0929	6.50E-11	0.0929
U-238	0.00E+00	0.0000	0.00E+00	0.0000	0.00E+00	0.0000	0.00E+00	0.0000	6.34E-10	0.9070	6.34E-10	0.9070
Total	0.00E+00	0.0000	0.00E+00	0.0000	0.00E+00	0.0000	0.00E+00	0.0000	7.00E-10	1.0000	7.00E-10	1.0000

Note: Ingestion and inhalation pathways do not apply for this scenario.

Overall Impact From Worker Scenarios
(dose in person-rem)

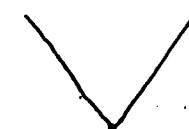
Nuclide	Collective Dose	Risk	Fraction
U-234	6.64E-05	3.76E-08	0.5254
U-235	2.83E-06	1.61E-09	0.0224
U-238	5.71E-05	3.24E-08	0.4522
Total	1.26E-04	7.16E-08	1.0000

Overall Impact From Consumer Scenarios
(dose in person-rem)

Nuclide	Collective			Cumulative		
	Dose	Risk	Fraction	Dose	Risk	Fraction
U-234	3.96E-07	3.00E-09	0.0035	3.95E-06	3.00E-09	0.0035
U-235	2.51E-05	1.91E-07	0.2238	2.51E-04	1.91E-07	0.2238
U-238	8.68E-05	6.59E-07	0.7727	8.68E-04	6.59E-07	0.7727
Total	1.12E-04	8.53E-07	1.0000	1.12E-03	8.53E-07	1.0000

Scenarios Ranking
(mrem & person-rem)

Scenario	Individual		Collective		Cumulative	
	Dose	Rank	Dose	Rank	Dose	Rank
Scrap Delivery: Scrap Cutter	9.25E-04	5	2.78E-09	7	2.78E-09	7
Scrap Smelting: Scrap Processor	1.21E-03	4	3.62E-09	6	3.62E-09	6
Scrap Smelting: Ingot Caster	2.52E-04	7	5.04E-10	8	5.04E-10	8
Scrap Smelting: Slag Worker	1.26E+00	1	1.26E-06	1	1.26E-06	4
Consumer Product: Appliance	4.65E-05	8	1.60E-08	5	1.60E-07	5
Consumer Product: Office Furniture	7.58E-04	6	4.24E-07	3	4.24E-06	3
Consumer Product: Home Furniture	1.42E-03	3	6.83E-07	2	6.83E-06	2
Reuse Product: Building Reuse	1.02E-01	2	4.08E-07	4	1.22E-05	1
Scrap Transportation: Public Exposure	0.00E+00	9	7.00E-12	9	7.00E-12	9



DIVIDE ALL DOSES BY 10.0
e.g. SLAG WORKER

$$\frac{1.26 \text{ E} + 00}{10} = 0.126 \text{ mrem/y}$$

* VERIFY ON PAGE 13

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Nuclide Concentrations and Dose Conversion Factors

Nuclide	Half Life yr	Avg Decay Factor	Ingestion DCF mrem/pCi	Inhalation DCF mrem/pCi	Concentration pCi/g
U-234	2.45E+05	1.00E+00	2.83E-04	1.32E-01	7.78E-01
U-235	7.04E+08	1.00E+00	2.67E-04	1.23E-01	3.50E-02
U-238	4.47E+09	1.00E+00	2.69E-04	1.18E-01	7.41E-01

Note 1: Internal dose conversion factors are taken from U.S. EPA FGR No. 11 (Ekerman et al., 1988).

Note 2: Average decay factor represents the average fraction of activity present over one year.

Note 3: For surface reuse scenarios, the concentration is in pCi/cm².

Percentage Partitioning Factors

Nuclide	Ingot	Air	Slag
U-234	8.0	2.0	90.0
U-235	8.0	2.0	90.0
U-238	90.0	2.0	8.0

Input Parameters of Selected Scenarios

Scenario	Dilution Fraction	Exp Time hr	Dust Load g/m3	Resp Fract	Inh Rate m3/hr	Inh Protec Factor	Ing Rate g/hr
Scrap Delivery: Scrap Cutter	1.00E+00	1.20E+01	1.00E-04	1.00E-01	2.50E+00	1.00E+00	6.25E-03
Scrap Smelting: Scrap Processor	1.00E+00	1.20E+01	1.00E-02	1.00E-01	2.50E+00	1.00E+00	6.25E-03
Scrap Smelting: Ingot Caster	1.00E+00	2.50E+00	1.00E-02	1.00E-01	2.50E+00	1.00E+00	6.25E-03
Scrap Smelting: Slag Worker	1.00E+00	2.50E+01	1.00E-02	1.00E-01	2.50E+00	1.00E+00	6.25E-03
Consumer Product: Appliance	1.00E+00	7.30E+02	0.00E+00	1.00E-01	0.00E+00	1.00E+00	0.00E+00
Consumer Product: Office Furniture	1.00E+00	2.00E+03	0.00E+00	1.00E-01	0.00E+00	1.00E+00	0.00E+00
Consumer Product: Home Furniture	1.00E+00	3.65E+03	0.00E+00	1.00E-01	0.00E+00	1.00E+00	0.00E+00
Reuse Product: Building Reuse	1.00E-02	2.00E+03	1.00E-06	1.00E-01	2.50E+00	1.00E+00	1.00E-04
Scrap Transportation: Public Exposure	1.00E+00	1.00E+00	0.00E+00	1.00E-01	0.00E+00	1.00E+00	0.00E+00

Note: For surface reuse scenarios, the dust load is the emission rate in (1/hr), the ingestion rate is in (m2/hr), and the dilution represents a surface transfer factor applied to inhalation and ingestion doses only.

Input Parameters of Selected Scenarios (cont)

Scenario	Decay T yr	Pop Time hr	# People	Prod Life yr	% Mass Distribution
Scrap Delivery: Scrap Cutter	0.00E+00	1.20E+01	3.00E+00	1.00E+00	1.00E+02
Scrap Smelting: Scrap Processor	0.00E+00	1.20E+01	3.00E+00	1.00E+00	1.00E+02
Scrap Smelting: Ingot Caster	0.00E+00	2.50E+00	2.00E+00	1.00E+00	1.00E+02
Scrap Smelting: Slag Worker	0.00E+00	2.50E+01	1.00E+00	1.00E+00	1.00E+02
Consumer Product: Appliance	0.00E+00	7.30E+02	4.30E+03	1.00E+01	8.00E+00
Consumer Product: Office Furniture	0.00E+00	2.00E+03	7.00E+03	1.00E+01	8.00E+00
Consumer Product: Home Furniture	0.00E+00	3.65E+03	6.00E+03	1.00E+01	8.00E+00
Reuse Product: Building Reuse	0.00E+00	2.00E+03	4.00E+00	3.00E+01	1.00E+02
Scrap Transportation: Public Exposure	0.00E+00	1.00E+02	3.86E+03	1.00E+00	1.00E+02

External Source Modeling Parameters

Scenario	Source Type	Geometry Applied
Scrap Delivery: Scrap Cutter	volume	default
Scrap Smelting: Scrap Processor	volume	default
Scrap Smelting: Ingot Caster	volume	default
Scrap Smelting: Slag Worker	volume	default
Consumer Product: Appliance	volume	default
Consumer Product: Office Furniture	volume	default
Consumer Product: Home Furniture	volume	default
Reuse Product: Building Reuse	surface	default
Scrap Transportation: Public Exposure	volume	default

Total Activity Released to the Atmosphere
Mass = 3.00E-03 tons

Nuclide	Activity (pCi)
U-234	4.67E+01
U-235	2.10E+00
U-238	4.45E+01
Total	9.32E+01

Total Activity in Slag for Disposal Option
Mass = 9.00E+00 tons

Nuclide	Activity (pCi)
U-234	7.00E+07
U-235	3.15E+06
U-238	5.93E+06
Total	7.91E+07

Total Activity in Baghouse for Disposal Option
Mass = 9.97E-01 tons

Nuclide	Activity (pCi)
U-234	1.56E+06
U-235	7.00E+04
U-238	1.48E+06
Total	3.11E+06

**Effective Dose Equivalents for
Scrap Delivery: Scrap Cutter
(mrem & person-rem)**

Nuclide	Ingestion		Inhalation		External		All Pathways		Collective		Cumulative	
	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.
U-234	1.71E-05	0.1851	3.09E-05	0.3341	2.43E-10	0.0000	4.80E-05	0.5192	1.44E-07	0.5192	1.44E-07	0.5192
U-235	7.25E-07	0.0078	1.29E-06	0.0139	7.38E-08	0.0008	2.09E-06	0.0226	6.27E-09	0.0226	6.27E-09	0.0226
U-238	1.55E-05	0.1674	2.63E-05	0.2844	5.97E-07	0.0065	4.24E-05	0.4582	1.27E-07	0.4582	1.27E-07	0.4582
Total	3.33E-05	0.3603	5.85E-05	0.6324	6.71E-07	0.0073	9.25E-05	1.0000	2.78E-07	1.0000	2.78E-07	1.0000

**Effective Dose Equivalents for
Scrap Smelting: Scrap Processor
(mrem & person-rem)**

Ingestion			Inhalation			External		All Pathways		Collective		Cumulative	
Nuclide	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	
U-234	1.52E-06	0.0126	6.18E-05	0.5123	2.43E-10	0.0000	6.34E-05	0.5249	1.90E-07	0.5249	1.90E-07	0.5249	
U-235	6.44E-08	0.0005	2.58E-06	0.0214	7.42E-08	0.0006	2.72E-06	0.0225	8.15E-09	0.0225	8.15E-09	0.0225	
U-238	1.38E-06	0.0114	5.26E-05	0.4361	6.08E-07	0.0050	5.46E-05	0.4526	1.64E-07	0.4526	1.64E-07	0.4526	
Total	2.96E-06	0.0245	1.17E-04	0.9698	6.83E-07	0.0057	1.21E-04	1.0000	3.62E-07	1.0000	3.62E-07	1.0000	

NUclide	Ingestion	Inhalation	External	All Pathways	Collective	Cumulative
	Dose	Fracct.	Dose	Fracct.	Dose	Fracct.
U-234	3.17E-07	0.0118	1.29E-05	0.4793	6.66E-11	0.0000
U-235	1.34E-08	0.0005	0.29E-05	1.29E-05	0.4911	2.64E-08
U-238	2.87E-07	0.0107	5.37E-07	0.0200	2.00E-08	1.14E-09
Total	6.17E-07	0.0230	2.44E-05	0.9073	1.87E-06	0.0698

Effective Dose Equivalents for
Scrap Smelting: Ingot Caster
(rem & person-rem)

**Effective Dose Equivalents for
Scrap Smelting: Slag Worker
(mrem & person-rem)**

Ingestion		Inhalation		External		All Pathways		Collective		Cumulative		
Nuclide	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.
U-234	1.58E-03	0.0215	6.44E-02	0.8720	2.07E-07	0.0000	6.60E-02	0.8935	6.60E-05	0.8935	6.60E-05	0.8935
U-235	6.71E-05	0.0009	2.69E-03	0.0364	6.33E-05	0.0009	2.82E-03	0.0381	2.82E-06	0.0381	2.82E-06	0.0381
U-238	1.27E-04	0.0017	4.87E-03	0.0660	4.65E-05	0.0006	5.05E-03	0.0683	5.05E-06	0.0683	5.05E-06	0.0683
Total	1.78E-03	0.0241	7.20E-02	0.9744	1.10E-04	0.0015	7.39E-02	1.0000	7.39E-05	1.0000	7.39E-05	1.0000

**Effective Dose Equivalents for
Consumer Product: Appliance
(mrem & person-rem)**

Nuclide	Ingestion		Inhalation		External		All Pathways		Collective		Cumulative	
	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.
U-234	0.00E+00	0.0000	0.00E+00	0.0000	2.27E-08	0.0005	2.27E-08	0.0005	7.81E-09	0.0005	7.80E-08	0.0005
U-235	0.00E+00	0.0000	0.00E+00	0.0000	9.69E-07	0.0230	9.69E-07	0.0230	3.33E-07	0.0230	3.33E-06	0.0230
U-238	0.00E+00	0.0000	0.00E+00	0.0000	4.11E-05	0.9764	4.11E-05	0.9764	1.41E-05	0.9764	1.41E-04	0.9764
Total	0.00E+00	0.0000	0.00E+00	0.0000	4.21E-05	1.0000	4.21E-05	1.0000	1.45E-05	1.0000	1.45E-04	1.0000

Note: Ingestion and inhalation pathways do not apply for this scenario.

**Effective Dose Equivalents for
Consumer Product: Office Furniture
(mrem & person-rem)**

Ingestion		Inhalation		External		All Pathways		Collective		Cumulative		
Nuclide	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.
U-234	0.00E+00	0.0000	0.00E+00	0.0000	2.68E-07	0.0004	2.68E-07	0.0004	1.50E-07	0.0004	1.50E-06	0.0004
U-235	0.00E+00	0.0000	0.00E+00	0.0000	1.69E-05	0.0251	1.69E-05	0.0251	9.49E-06	0.0251	9.48E-05	0.0251
U-238	0.00E+00	0.0000	0.00E+00	0.0000	6.59E-04	0.9745	6.59E-04	0.9745	3.69E-04	0.9745	3.69E-03	0.9745
Total	0.00E+00	0.0000	0.00E+00	0.0000	6.76E-04	1.0000	6.76E-04	1.0000	3.79E-04	1.0000	3.78E-03	1.0000

Note: Ingestion and inhalation pathways do not apply for this scenario.

**Effective Dose Equivalents for
Consumer Product: Home Furniture
(mrem & person-rem)**

Ingestion			Inhalation			External		All Pathways		Collective		Cumulative	
Nuclide	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	
U-234	0.00E+00	0.0000	0.00E+00	0.0000	4.96E-07	0.0004	4.96E-07	0.0004	2.38E-07	0.0004	2.38E-06	0.0004	
U-235	0.00E+00	0.0000	0.00E+00	0.0000	3.19E-05	0.0251	3.19E-05	0.0251	1.53E-05	0.0251	1.53E-04	0.0251	
U-238	0.00E+00	0.0000	0.00E+00	0.0000	1.24E-03	0.9745	1.24E-03	0.9745	5.94E-04	0.9745	5.93E-03	0.9745	
Total	0.00E+00	0.0000	0.00E+00	0.0000	1.27E-03	1.0000	1.27E-03	1.0000	6.09E-04	1.0000	6.09E-03	1.0000	

Note: Ingestion and inhalation pathways do not apply for this scenario.

**Effective Dose Equivalents for
Reuse Product: Building Reuse
(mrem & person-rem)**

Ingestion			Inhalation			External		All Pathways		Collective		Cumulative	
Nuclide	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	
U-234	4.41E-03	0.4324	2.01E-05	0.0020	7.31E-05	0.0072	4.50E-03	0.4415	1.80E-05	0.4415	5.40E-04	0.4414	
U-235	1.87E-04	0.0183	8.37E-07	0.0001	3.05E-04	0.0299	4.92E-04	0.0483	1.97E-06	0.0483	5.94E-05	0.0486	
U-238	3.99E-03	0.3909	1.71E-05	0.0017	1.20E-03	0.1177	5.20E-03	0.5102	2.08E-05	0.5102	6.24E-04	0.5100	
Total	8.58E-03	0.8416	3.80E-05	0.0037	1.58E-03	0.1547	1.02E-02	1.0000	4.08E-05	1.0000	1.22E-03	1.0000	

**Effective Dose Equivalents for
Scrap Transportation: Public Exposure
(mrem & person-rem)**

Nuclide	Ingestion		Inhalation		External		All Pathways		Collective		Cumulative	
	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.	Dose	Fract.
U-234	0.00E+00	0.0000	0.00E+00	0.0000	0.00E+00	0.0000	0.00E+00	0.0000	4.97E-14	0.0001	4.97E-14	0.0001
U-235	0.00E+00	0.0000	0.00E+00	0.0000	0.00E+00	0.0000	0.00E+00	0.0000	6.50E-11	0.0929	6.50E-11	0.0929
U-238	0.00E+00	0.0000	0.00E+00	0.0000	0.00E+00	0.0000	0.00E+00	0.0000	6.34E-10	0.9070	6.34E-10	0.9070
Total	0.00E+00	0.0000	0.00E+00	0.0000	0.00E+00	0.0000	0.00E+00	0.0000	7.00E-10	1.0000	7.00E-10	1.0000

Note: Ingestion and inhalation pathways do not apply for this scenario.

Overall Impact From Worker Scenarios
(dose in person-rem)

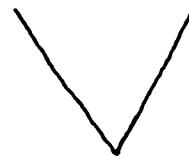
Nuclide	Collective Dose	Risk	Fraction
U-234	6.64E-05	3.76E-08	0.8900
U-235	2.83E-06	1.61E-09	0.0380
U-238	5.37E-06	3.04E-09	0.0720
Total	7.46E-05	4.23E-08	1.0000

Overall Impact From Consumer Scenarios
(dose in person-rem)

Nuclide	Collective			Cumulative		
	Dose	Risk	Fraction	Dose	Risk	Fraction
U-234	3.96E-07	3.00E-09	0.0004	3.95E-06	3.00E-09	0.0004
U-235	2.51E-05	1.91E-07	0.0251	2.51E-04	1.91E-07	0.0251
U-238	9.77E-04	7.42E-06	0.9745	9.76E-03	7.42E-06	0.9745
Total	1.00E-03	7.61E-06	1.0000	1.00E-02	7.61E-06	1.0000

Scenarios Ranking
(mrem & person-rem)

Scenario	Individual		Collective		Cumulative	
	Dose	Rank	Dose	Rank	Dose	Rank
Scrap Delivery: Scrap Cutter	9.25E-04	6	2.78E-09	7	2.78E-09	7
Scrap Smelting: Scrap Processor	1.21E-03	5	3.62E-09	6	3.62E-09	6
Scrap Smelting: Ingot Castér	2.69E-04	8	5.38E-10	8	5.38E-10	8
Scrap Smelting: Slag Worker	7.39E-01	1	7.39E-07	3	7.39E-07	5
Consumer Product: Appliance	4.21E-04	7	1.45E-07	5	1.45E-06	4
Consumer Product: Office Furniture	6.76E-03	4	3.79E-06	2	3.78E-05	2
Consumer Product: Home Furniture	1.27E-02	3	6.09E-06	1	6.09E-05	1
Reuse Product: Building Reuse	1.02E-01	2	4.08E-07	4	1.22E-05	3
Scrap Transportation: Public Exposure	0.00E+00	9	7.00E-12	9	7.00E-12	9



DIVIDE ALL DOSES BY 10.0

e.g. SLAG WORKER

$$\frac{7.39 \times 10^{-1}}{10} = 7.39 \times 10^{-2} \text{ mrem/y}$$

* VERIFY ON PAGE 13